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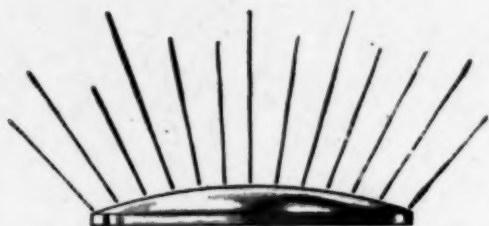
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FIG. 1. ESSENTIAL PROGRESSIVE ATROPHY OF IRIS. (J. HERBERT WAITE)



FIG. 2. FAMILIAL ROSETTE FIGURE OF THE MACULA. (ALBERT M. BROWN)

ESSENTIAL PROGRESSIVE ATROPHY OF THE IRIS

J. HERBERT WAITE, M.D.

BOSTON

The previous accounts of this condition are referred to. A case is reported. Under observation five years there has been progressive atrophy of the iris and one exacerbation of glaucoma relieved by sclerectomy. There has been no fundus lesion and no impairment of the visual field. The explanation of such atrophy is yet to be discovered.

De Schweinitz¹ quotes from the literature twelve authentic cases of essential progressive atrophy of the iris, and he cites in addition four authentic but unreported cases of which he knows. Griscom² reports another case with slit-lamp studies, and he speaks of the cases recently reported by Kreiker³ and by Gifford⁴. The present case is one of three authentic cases which have been followed during the past few years in the clinics of the Massachusetts Eye and Ear Infirmary. In 1903 Harms⁵ reported that Bergeat had demonstrated a similar condition in the iris of the bulldog.

In his studied summary of human cases, de Schweinitz calls attention to the order of appearance of clinical signs in essential progressive atrophy of the iris, as follows:

First: The intact pupil becomes eccentric and distorted.

Second: The stretched half of the iris progressively atrophies.

Third: Glaucoma sets in.

With respect to the third step, he states that the visual acuity and the visual fields were found to be intact in all cases studied early, the cases of de Schweinitz, Licsko,⁶ Rochat and Mulder⁷, and Arnold⁸.

In the case here reported, events developed in accordance with de Schweinitz' summary, and through adequate drainage the affected eye has for four years retained its visual acuity, a normal visual field, and a normal light minimum, in spite of the fact that iris has progressively wasted.

Case: B. F., unmarried, Jewess, aged 22 years, was first seen at the Massachusetts Eye and Ear Infirmary

March 24, 1923. Illiterate, a recent emigrant from Russia, she came for glasses to improve her vision. She had never worn glasses before, and stated that there had never been any disease or inequality of vision of which she had been aware. Her sister testified that the patient's eyes had always looked alike. With plus four cylinders combined with small minus spheres, her vision in each eye on that day was 20/70, improving to 20/50 O.U. at her next visit two months later. Her nerve heads, visual fields, and tension were normal. Her right pupil was drawn down nasally, while the root of the right iris was beginning to show atrophy up and out. The corneal diameters were each 11.5 mm.

Her third visit, November 19, 1923, was the result of a sequence for twenty four hours previously of severe pain, halos, and reduced vision in the right eye. The right eye then showed with glass a vision of 20/100, a tension of 43 mm. by Schiötz, a steamy cornea, and an anterior chamber of normal depth. The left eye, with no abnormalities from the first visit, showed with glass an acuity of 20/50. After pilocarpinizing the right eye overnight, Dr. R. C. Cheney performed a generous Lagrange sclerectomy with scissors. This was without iridectomy, because of the through and through atrophy of the root of the iris at the site. At twenty subsequent visits during 1924, 1925, 1926, and 1927, the tension of the operated right eye has never registered over 12 millimeters of mercury by the Schiötz tonometer. If one can safely judge by the size and number of bleb-locules, the rate of filtration is in-

creasing as the iris is wasting, because the loculi are larger and of greater number.

Control of glaucoma in the right eye has had no beneficent effect upon the progressive atrophy of the iris, as shown in the illustrations, under dates of December, 1923, September, 1924, and May, 1927. The right eye, therefore, has been subjected to repeated and searching examinations with the slit-lamp. At no time has there been slit-lamp evidence of either active or old intraocular inflammation, of anything in the nature of cells suspended in the aqueous, or of particles deposited upon lens or corneal surfaces. Since December, 1923, the right cornea has presented by slit-lamp a normally appearing epithelium, stroma, and endothelium; the only abnormality being very fine pigment points on the posterior face of the cornea, simulating Krukenberg's spindle. The anterior chamber in the zone of the pupil has always been of normal depth. The pupil has always been anchored at five o'clock, at first by a narrow uveal ectropion, and finally by a broad anterior synechia, which has drawn the pupil to within one millimeter of the limbus line.

Even with the advanced atrophy of the iris, the sphincter at the last examination in May, 1927, was still well preserved, as shown by its prompt reaction to light everywhere except where anchored from five to six o'clock. From the beginning, the maximum atrophy of the iris has been opposite to the uveal ectropion and anterior synechia. The atrophic areas run radially from the iris root toward the pupil, but spare the sphincter territory. At no time could iris blood vessels be identified by contained blood, in any part of the atrophic iris. The atrophy involved all layers of the iris, and the atrophic spaces showed bridge-like radial strands, some translucent like cobweb, and some enhanced in densely pigmented covering.

The lens has remained clear throughout. There has never been any cupping of the disc, nor any fundus lesion discoverable in the right eye. At the last examination in May, 1927, the visual

acuity of the right eye was 20/50, with correcting lens, the visual field was full, and the blind spot was normal in size. There was normal light minimum perception in each eye, as tested by the method of Waite, Derby, and Kirk⁹.

Histological examinations in the cases of Wood¹⁰, Bentzen and Leber¹¹, Feingold¹², Licsko, and Rochat and Mulder have failed to throw much light either on the cause of the iris atrophy or on the cause of the glaucoma. The finding common to all five cases has been peripheral anterior synechia, but with normally deep anterior chamber. Both Licsko and Feingold found hyaline degeneration of the walls of the iris blood vessels, but only occasionally and only by looking for it. One must remember in studying histological material of this kind that the eye is not available until it has run through a long series of degenerations to blindness, and hence one ought to supplement histological findings with physiological observations made during the course of the disorder.

If we take the clinical signs chronologically, we have, first, **eccentricity of the pupil**. No one has ever thrown any light upon the pathogenesis of this condition, why it progresses, or how it is attended by uveal ectropion with anterior synechia. If we think of the iris as a two-layered sheet of tissue, from one point of attachment slung around the sphincter pupillae to the other point of attachment, we may have a clue. The posterior layer is composed of ectoderm from the optic vesicle, and is avascular and without capillaries. The anterior layer, the stroma, is derived from mesoderm richly supplied with vessels and capillaries. Undoubtedly, the primary change in essential atrophy of the iris occurs in the mesodermal portion of the iris, and it is manifested as a local contraction of this layer. Since no one can say how this is brought about, one must strive all the more to learn about the physiology and pathology of this tissue.

We have, next, **atrophy of the iris** opposite to the anchored segment of the pupil. De Schweinitz invokes as possible cause for this a local abiotrophy, or premature senility with

death of cells. Kreiker, on the other hand, advances the possibility that it might be just the opposite, a continuation locally of the cytolytic processes which normally cease in embryonic life. It would seem that one need not go so far as this, but seek the explanation in the mechanical stretching of the iris. The radial iris arteries have tortuous and extremely thick walls, and they have lumens so small that red blood cells must pass in single file. May not sufficient traction, then, occlude the lumen to such an extent that blood can not pass? In this manner, nutrition would be cut off from all that segment of the iris, except the portion supplied by the lesser circle; in brief, from just that portion which undergoes atrophy.

Finally, we have **glaucoma**. Neither clinical nor histological findings support the belief of Casey Wood that glaucoma in these cases is due to low grade uveitis, or the view of Licsko that released pigment blocks the filtration angle. Since peripheral anterior synechia has been found in all five eyes examined for this condition, it is a great temptation to seize upon this factor as the probable explanation of the glaucoma. However, Serr¹³ and others have very forcibly pointed out that hydrodynamic pressure is not the

only effective force in intraocular fluid exchange, but that osmotic forces must be considered as well. Starling¹⁴ and many others have proven that the colloids of the blood exert an osmotic pressure equivalent to thirty millimeters of mercury. Waite¹⁵ has hypothesized capillary beds of different pressure levels in the eye; high pressure capillaries of the ciliary processes in which hydrodynamic forces exceed osmotic forces; and low pressure capillaries of the iris in which osmotic forces exceed hydrodynamic forces. If this assumption is found to be true, then the iris capillaries will have to be recognized as a most important outlet for aqueous. The glaucoma of essential atrophy of the iris does not appear until there is marked loss of iris tissue, and therefore of iris capillaries. Of course, it is not the iris surface which counts, but the total surface of the functioning iris capillaries, where blood meets aqueous.

In conclusion, it seems that before the pathogenesis of essential atrophy of the iris can be elucidated, we shall have to delve more deeply into the physiology and pathology of the mesodermal portion of the iris, particularly into the behavior of the iris capillaries and the fluids which they separate.

23 Bay Street road

REFERENCES

- ¹ deSchweinitz, Arch. of Ophth. 1927, v. 56, p. 10.
- ² Griscom, Amer. Jour. of Ophth. 1927, v. 10, p. 647.
- ³ Kreiker, Klin. M. f. Augenh., 1926, v. 76, p. 575.
- ⁴ Gifford, Amer. Jour. Ophth. 1926, v. 9, p. 548.
- ⁵ Harms, Klin. M. f. Augenh. 1903, v. 41, p. 522.
- ⁶ Licsko, Klin. f. Augenh. 1923, v. 71, p. 457.
- ⁷ Rochat and Mulder, Brit. Jour. Ophth. 1924, v. 8, p. 362.
- ⁸ Arnold, Klin. f. Augenh. 1923, v. 71, p. 723.
- ⁹ Waite, Derby, Kirk, Trans. Ophth. Soc. United Kingdom, 1925, v. 45, p. 301.
- ¹⁰ Wood, Ophthalmoscope, 1910, v. 8, p. 858.
- ¹¹ Bentzen and Leber, Graefe's Arch. 1895, v. 41, p. 229.
- ¹² Feingold, Amer. Jour. Ophth., 1. 1, 1918.
- ¹³ Serr, Graefe's Arch., 1925, v. 116, p. 692.
- ¹⁴ Starling, 3rd edition Human Physiology, 1920, p. 1069.
- ¹⁵ Waite, Arch. of Ophth. 1927, v. 56, p. 460.

FAMILIAL ROSETTE FIGURE OF THE MACULA

ALBERT L. BROWN, M.D.

CINCINNATI

In a family of five children four presented the macular figure which is reproduced in the author's drawing. The general appearance was that of an irregularly shaped reddish wheel with a large hub and very small spokes. The vision was appreciably reduced.

The cases herein reported present striking macular figures and definitely reduce the vision in each case. I felt, on first viewing the case that disclosed this odd familial condition, that there must be some counterpart in the literature. The closest resemblance discovered was Deutschmann's wheel figure of the macula. The characteristics of this wheel figure differed in situation, size, color and effect on vision, and it was not reported as being in members of the same family. In the Ophthalmic Record, October, 1913, Gradle mentions several rare anomalies of the macula, but they do not coincide with the one herein recorded.

First case: J. S., aged ten years, was brought in by his father at the instance of a school teacher. The teacher had been watching the boy and noticed that he did not seem to have normal vision. Examination revealed:

V.O.D. = 20/65, V.O.S. = 20/60. (Unimproved by correcting a slight hyperopia under homatropin.) Ocular movements full in all directions, no diplopia elicited, 0.5 degree of right hyperphoria, and slight exophoria. Pupils equal, regular, react well to the usual stimuli. Media clear.

Right fundus: Disc fairly sharply outlined. Surface of disc moderately pale. Capillarity distinct. Vessels of good caliber. In the macula is a raised figure in the center of which is a dark dot which is undoubtedly the foveal area. The mass seems to be composed of reddish deposits not unlike the color and setting of the seeds of a red raspberry. These deposits glisten under the ophthalmoscope light. Around the periphery of this figure a few irregular "spokes" extend a little distance into the surrounding retina. This gives the appearance of an irregularly shaped wheel with a large hub and very small spokes. The finer branches of the retinal vessels in this area are entwined

in the figure, disappearing at some points and reappearing over a spoke here and there. The rest of the fundus is entirely negative.

The left eye has a similar figure, with not quite so many spokes but just as solid a body.

General physical examination was entirely negative, as reported by a competent internist.

When this interesting anomaly was disclosed, the mother and father were immediately examined but they presented no signs of any kind. The vision of each was normal, as were the other ocular findings. They recalled no immediate relatives who had any remarkable eye trouble. They had four other children, who were brought in; and three of these four were found to have exactly the same type of figure as the first examined.

Second case: L. S., male, aged fifteen years. V.O.D. = 20/70. V.O.S. = 20/45. (Unimproved by correction.) Ocular examination and general examination negative except for figure at maculae.

Third case: R. S., female, aged twelve years. V.O.D. = 20/60. V.O.S. = 20/65. (Unimproved by correction.) General physical examination and ocular examination negative except for figure at maculae.

Fourth case: G. S., male, aged eight years. V.O.D. = 20/45. V.O.S. = 20/50. (Unimproved by correction.) Ocular and general physical examination negative except for figure at maculae.

V. S., female, aged six years. V.O.D. = 20/25. V.O.S. = 20/20. With correction V.O.U. = 20/15. Ocular and general physical examination negative. No abnormality in either fundus.

I have no explanation to offer for this odd figure, and if a similar one has been previously described I can only plead oversight as an excuse for failure to mention it.

2600 Union Central Life building

AN ADVANCEMENT OPERATION WITHOUT DESTRUCTION OF TISSUE

THOMAS J. CLEMENS, M.D.

PHILADELPHIA

The operation consists of folding the tendon beneath the muscle, against the sclera, while advancing the posterior end of the fold to a point anterior to the original insertion, where it is secured by two silk sutures which are tied on the outside, the sutures at the same time drawing the edges of the conjunctival wound together. To facilitate the folding, a special instrument has been devised.

In the treatment of strabismus there are so many factors present that it is quite a problem to decide upon the method of procedure in order to insure a perfect result. In young children it becomes necessary to delve rather deeply into the history of the case in order to determine if the squint is a family characteristic and the case in hand merely a manifestation of an inherited anomalous muscle development, a weak fusion sense, or some gross refractive error.

In any of these instances success depends upon how early treatment is begun. The first essential is to preserve visual acuity in both eyes, if possible, because delay favors amblyopia. It is not within the province of this paper to go into detail regarding the treatment of this class of patients, but in many cases I have had gratifying results by adopting simple fusion stimuli and muscle exercises.

When refractive errors are present, early treatment by properly fitted lenses is of untold benefit. Many instances of perfect results have been obtained where children two or three years of age were properly fitted with glasses. In older children up to the age of eight or ten years, I have often improved the vision of partially amblyopic eyes after forcing their use by blinding or partially blinding the better eye.

Where strabismus is present in patients past six or seven years of age there seems to be no other alternative than operative interference, and here again our problem is not solved merely by the selection of an operative method. We still have the predisposing factors to consider, and these are usually complicated with an amblyopic condition, a weakened fusion sense, or an exaggerated muscle imbalance.

The muscle drawing an eye over has increased in strength, while the opposing muscle has become weakened and the

tendon so stretched that even if shortened it is unable to function properly and practically invites failure.

I have seen many instances of operations on ocular muscles which appeared to have perfectly corrected the squint, only to have it return after a short time as bad as ever. This may be due to the fact that the strong antagonist was not weakened; or the shortened muscle or the fusion sense was not stimulated.

It is therefore my practice not only to shorten a muscle on one side but to weaken its opponent until the eye is straight and to follow the operative procedure with muscle exercises, fusion stimuli, and an attempt to overcome the amblyopic condition. Even then, there sometimes remains a certain degree of phoria which must be corrected with lenses. Sometimes months of this postoperative treatment were necessary before the patient had perfect binocular single vision and the eyes remained straight.

In the operation which I have devised for the correction of strabismus there is no destruction of tissue, no buried suture, no tumefaction, no chance for slipping, and very little postoperative disturbance. The operation is simple and effective. Any amount of correction may be done by merely gauging the distance of inserting the posterior sutures. Two silk sutures are used which advance the tendon anterior to its original insertion and at the same time close the conjunctival incision when they are tied on the outside. A special instrument is necessary to insure proper displacement of the tuck into the orbital cavity below and to keep the sutures in their proper position so that they will not strip through the fibers of the tendon when drawing the posterior portion forward.

There is nothing more disconcerting than movements of the patient and manifestations of pain during an opera-

tion done under local anesthesia. Often the results are jeopardised in consequence, and for that reason I prefer to use a general anesthetic in this operation.

The technique of the operation is conveniently arranged in four stages. The instruments used are: speculum, fixation forceps, scissors, two strabismus hooks, special tucker, needles, and needle holder.

Stage one: An incision is made in the conjunctiva over the site of the tendon of the muscle to be advanced, 5 mm. from and parallel to the limbus. Blunt, pointed scissors with the blades closed are inserted into Tenon's capsule and then opened and withdrawn, thus exposing the tendon. The anterior flap of the conjunctiva is separated from the sclera in the same manner. There is no further cutting of tissue after the initial incision. A strabismus hook is then inserted and the tendon caught up, and a second hook is passed under the tendon from the opposite side. Using these hooks, the tendon is now tripped of all adhering tissue for a distance of about 12 mm. I insist on clearing the tendon for this distance. Throughout the operation one of the hooks is kept under the tendon on one side or the other, to insure perfect control. The tendon is next scraped with a curette along the entire outer and inner surfaces, particularly at the insertion where it joins the sclera. The strabismus hook raises the tendon while curetting the under surface of the muscle.

Great emphasis is placed on this curettement. The curette used is a ring instrument about 3 mm. in diameter with a saw edge.

Stage two: Two double-armed sutures, ten inches long, of no. 6 twisted silk are used.

The tendon is slightly raised on a hook while the needle is inserted at a point about three eighths of the tendon width, from underneath at the tendoscleral insertion. (Fig. 1.) It is then continued along the sclera, picking up a few superficial fibers of the sclera in its passage, and emerges at the outer junction of the insertion. The strabismus hook is then passed to an assistant while the anterior flap of the

conjunctiva is picked up and the needle continued through to emerge on the outer surface near the limbus. The

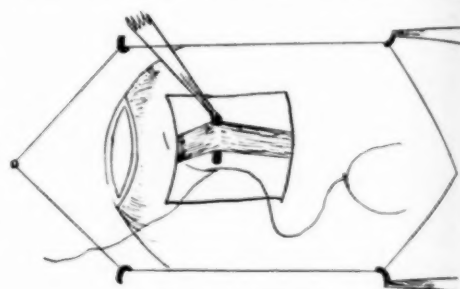


Fig. 1 (Clemens).

needle is then removed from that end of the suture. Exactly the same procedure is carried out on the opposite border of the tendon with the second suture.

Stage three: A decided advantage in this operation is the ease with which the amount of desired correction can be obtained, it being merely a question of locating the posterior anchorage of the suture at a point in the tendon to gauge the amount of correction required. That amount having been decided, the remaining needle, on suture number one, is inserted from below the tendon, a distance of about three eighths of the tendon width, at the point of correction decided upon. The needle having pierced the tendon, the strabismus hook is passed to the assistant, when the posterior flap of the conjunctival wound is picked up and the needle continued through the conjunctiva, emerging on its outer surface. (Fig.

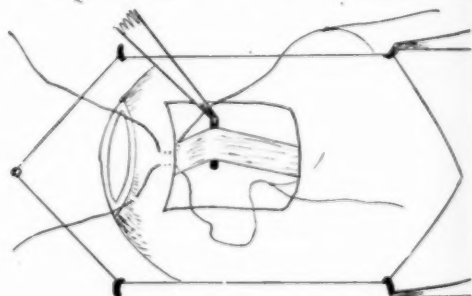


Fig. 2 (Clemens).

2.) The needle is then removed from that end of the suture. Suture number two is inserted in the same manner. The sutures are now each separated and

drawn upon until the slack is almost taken up.

Stage four: During the foregoing the strabismus hook has been constantly under the tendon, being passed to the assistant when necessary. With the hook still under the tendon, the two sutures running parallel to the tendon are picked up on another strabismus hook by the assistant. These loops are elevated while a tucker (which I have designed for this operation and which is made by Charles Lentz of Philadelphia) is inserted. (Fig. 3.) The tension being



Fig. 3 (Clemens).

fully released from the tucker the double prongs are placed beneath the tendon while the single adjustable prong is placed over the tendon and under the sutures. (Fig. 4.) At this point care

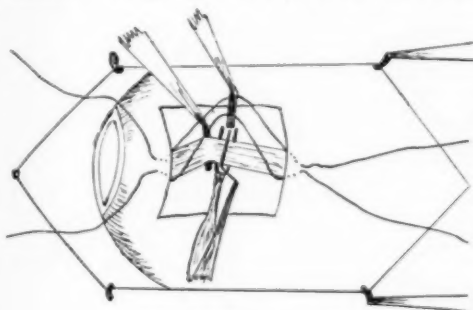


Fig. 4 (Clemens).

must be exercised to maintain the sutures above the tendon and the single prong of the tucker. The strabismus hook is now withdrawn from beneath the tendon. The single prong is then pressed down between the double prongs of the tucker, carrying the tendon with it into the space below, between the sclera and the muscle, and leaving the sutures, held by the assistant, free and loose above it.

The assistant removes the strabismus hook and the ends of the sutures are next picked up, one suture by the operator and the other by the assistant (Fig. 5), and tied with a single knot only, the single knot being drawn fairly snug but not too tight. This brings the distal

portion of the tendon forward and folds it over the insertion. The assistant holding the sutures taut, the single

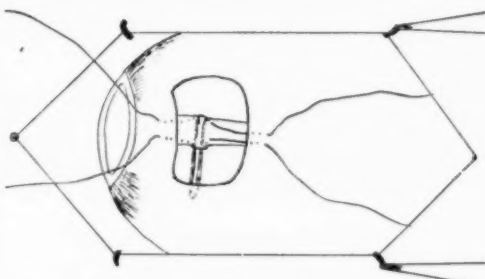


Fig. 5 (Clemens). Here the tucker is not sketched, in order to show the course of the sutures before being tied.

prong of the tucker is then released until the prongs are on an even plane, when the tucker is easily withdrawn. Before withdrawing the instrument be sure the fold is kept down: if, however, it is inclined to follow the tucker it may easily be replaced by using the tucker as a probe.

The tucker having been withdrawn, the sutures are now given their final tension, thus bringing the distal edge of the folded tendon forward to a point anterior and superior to the insertion, where it is firmly tied, thus making a true advancement. Accordingly, when the two sutures are tied on the outside the insertion is advanced. (Fig. 6.) The two outer edges of the conjunctival wound are drawn together in their original position and, at the same time, the

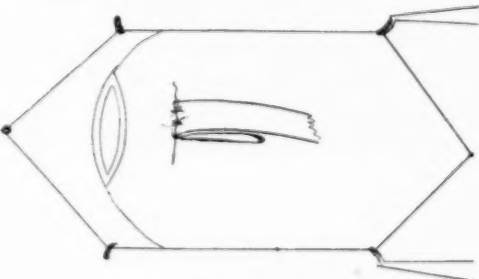


Fig. 6 (Clemens).

tendon is shortened with the folded portion flattened out posteriorly against the sclera beneath the tendon and held in this position by the muscle.

The pressure of the muscle on the folded tendon confines it to its place,

holding the scarified surfaces together and the fold even forms a fulcrum to give additional leverage to the muscle.

After the first few days the folded portions of the tendon become thoroughly adherent, thus relieving the tension from the sutures.

Both eyes are bandaged and kept at rest under atropine for about eight or ten days until union is complete. If at the end of that time the eye does not seem to be straight, the bandages and atropine may be continued for a longer period. This allows the newly formed

fibrous tissue in the folded tendon to become firmly established, and also overcomes the tendency of the opponent to contract.

On the other hand, if the eye is slightly overcorrected the bandage may be removed and the atropine stopped. This stimulates convergence and overcomes to some extent the contraction consequent upon formation of the cicatrix.

The sutures are removed in ten or twelve days or as soon as the eye is quiet.

2008 Walnut street

A CLINICAL METHOD TO DETERMINE THE RATE OF MACULAR ELIMINATION OF AFTER-IMAGES (EIKONOSCOPY^a)

(A preliminary report.)

JOHN N. EVANS, M.D., F.A.C.S.

BROOKLYN

By means of special apparatus which is described and illustrated, adaptation time relations were studied as to light adaptation, dark adaptation, and recovery adaptation (eradication of residual after images). Results are tabulated in regard to twenty eyes of ten individuals between the ages of twenty-two and thirty-seven years.

The slightest deviation from the physiological when applied to the most primitive functions should give the first suggestion of pathological change. Such derangement usually precedes organic destruction. Recognition of these early deviations should permit the application of measures for their correction before permanent damage has been done.

The most primitive element of retinal function is the perception of light and the recognition of an illuminated body^b. Stimulation of the retina in this sense implies a metabolic phase to reestablish the previous chemicophysical state. We are cognizant of this recuperative phase by the presence of the after-image. The duration of the recuperation is indicated perhaps by the time of fading of the after-image, but the complete

metabolic process may not be indicated by this subjective sign. If a clinical standard can be established which will measure the duration of the after-image we may be in a position to draw inferences which will have a diagnostic value for the interpretation of abnormal metabolism of the retina during this recovery period. It is at once obvious that the after-image as ordinarily noted is not suitable for clinical study. First, because the average person discovers it only after exposure to very intense light, and, second, because it is not only fatiguing but actually dangerous. It was discovered accidentally that the after-image of even weak lights could be made very vivid by turning the gaze to a surface exposed to a flickering light¹. With this as a starting point a series of studies was commenced about two years ago. In order to produce an after-image under standard conditions it was evident that a number of factors would need to be elucidated.

These may be outlined as follows:

^a "Eikonoscopy" is chosen as a suggestive rather than a descriptive name, to indicate "image watching". An attempt to create a descriptive name was not satisfactory.

^b The simple differentiation between darkness and light might seem even more primitive, but the perception of light is only a relative judgment at best, particularly when we recall the ever present "intrinsic light" of the retina.

¹ An observation by W. R. Grove (see note 2) on a mode of reviving dormant impressions on the retina was made in 1852.

1. The subjects to be studied were young adults^e

- (a) of average intelligence,
- (b) known to be in good general health,
- (c) known to have no ocular disease,
- (d) known to be emmetropic or to have a low degree of ametropia, corrected and without evidence of asthenopia.

Effort was to be made to rule out even minor digestive disturbances. Special notations were to be made which might be significant.

2. The adaptation time relations—degree and duration—for

- (a) light adaptation
- (b) dark adaptation,
- (c) recovery adaptation (for the eradication of residual after-images).

3. The primary stimulus as to

- (a) kind of stimulus—glowing filament, reflected, transmitted,
- (b) shape of stimulus,
- (c) area of exposure (angular size)
- (d) duration of exposure (time of)
- (e) intensity of stimulus—absolute and relative (as compared with reacting stimulus),
- (f) color of stimulus,

4. The reacting stimulus:

- (a) kind of stimulus—shutter, reflected, transmitted,
- (b) shape of stimulus,
- (c) area of exposure (angular size as compared with that of primary stimulus),
- (d) intensity of stimulus—absolute and relative (compared to primary stimulus),
- (e) duration of exposure phase,
- (f) duration of dark phase,
- (g) color of stimulus.

5. The type of after-image best suited:

- (a) positive,
- (b) negative.

It soon became evident that certain factors would not need detailed study but that others would have to be carefully analyzed.

Certain general principles were already commonly known² and could be temporarily accepted. These may be enumerated as follows (related to the negative after-image):

1. The more intense the stimulating light, the longer the after-image lasts.
2. The less fatigued the eye the longer the after-image lasts.
3. The after-image corresponds in the field to the place where the retina was originally stimulated.
4. A single point is focused to get the best delineation.
5. When light portions of the image appear light in the after-image, we call the after-image positive. When light portions of the image appear dark in the after-image, we call the after-image negative. (The negative after-image has been chosen in this work as being more vivid on a white background. The white background was chosen because when soiled it is more easily replaced than a black.)
6. Movements of the eyes, head, or body tend to obscure and reduce the time of fading of the after-image.

With these points in mind a device was constructed for the more refined studies.

The first instrument devised was a funnel-shaped brass box which was adaptable to the ocular of the Lloyd stereocampimeter. A prism placed on its outer surface deflected a beam of light from a miniature electric lamp through an adjustable diaphragm in such a way as to impinge upon a balanced mirror. This mirror could be rotated through 90° so as to direct the beam upward into the patient's eye, or downward upon the lower end of the box, which formed a screen. The ocular of the campimeter was provided with a large camera shutter which could be operated as a "flicker shutter" by a trigger or bulb.

This device had to be remodeled many times until the final instrument

^e This is emphasized because it is realized that a special study must be made to disclose the relation to the age of the subject.

² The most readily available material is to be found in the American translation of Helmholtz' "Physiological Optics".

was evolved. Each change of importance demanded the study of a new series of subjects.

Description of present instrument:

A box of aluminum plates was constructed approximately 345 by 215 by 165 mm., the upper or ocular end having a shield 90 mm. high across the front (distal to the patient) and both

sides so as to protect the subject from extraneous light. Two eye pieces were provided in the top and were fitted with lenses of +3 D. strength which focused on the opposite end of the box 33 cm. below. This lower end was closed by a sliding screen (165 mm. by 240 mm.) of mat white paper at 330 mm. from the oculars (the reading

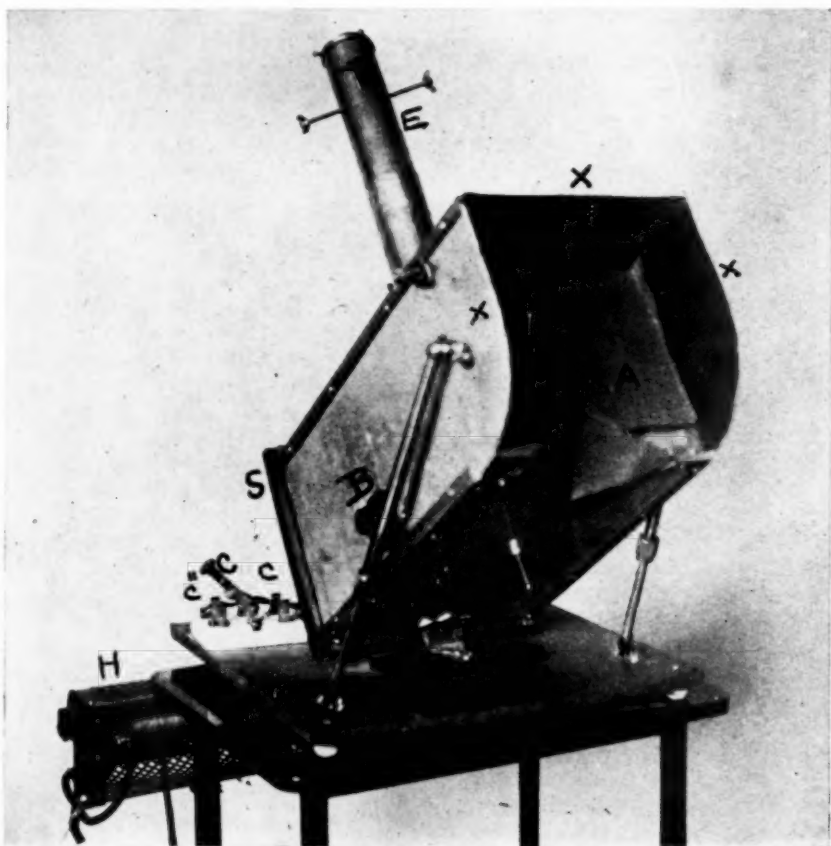


Fig. 1. Appearance of the eikonoscope from the front (patient's side). (These photographs were purposely taken before the instrument received its dull black finish.)

Letters correspond to same parts in each figure.

- X.—Shields to cut off extraneous light to patient.
- A.—Observation aperture of ocular (right eye).
- B.—Mirror-turning dial-knob. Turned fully towards patient gives primary light; turned fully away gives reacting light.
- K.—One of mirror stops—other not indicated. Limits the extremes of mirror tilt for primary and reacting lights.
- C.—Double throw switch—drops into seat C'' for primary light. When thrown to the right C', the reacting light, becomes effective as

the current is then passed through the "flasher". (A single button switch operated by hand works just as well and simplifies the wiring by avoiding the use of double switch and automatic flasher.)

- E.—Lamp housing showing centering screws and sliding adjustment for intensity regulation.
- H.—Slit-lamp rheostat permanently set at intermediate position so that light is least rich in red or yellow, yet not so near the full capacity of the filament as to give excessively rapid degeneration.
- S.—Indicates screen which is slid into the instrument through a light-tight slot and forms the bottom of the box. When withdrawn the opening accepts the "foot-candle meter" for measuring the intensity of the stimulus.

distance). A window 15 mm. in diameter was made through the wall of the box on its distal side. About this opening on the outside, a collar was adapted to receive the illuminating lamp tube. At 165 mm. from the oculars a rod or axle was passed through the box from side to side provided at its ends with dials. On this axle and at

phragm with an opening seven mm. in diameter and an obturator adapted to cover either opening at will.

The lamp housing referred to above was constructed of an outer tube closed by a finely ground glass window. Within this fixed tube, a sliding tube was adjusted so that it could be drawn in and out. In the distal end of this

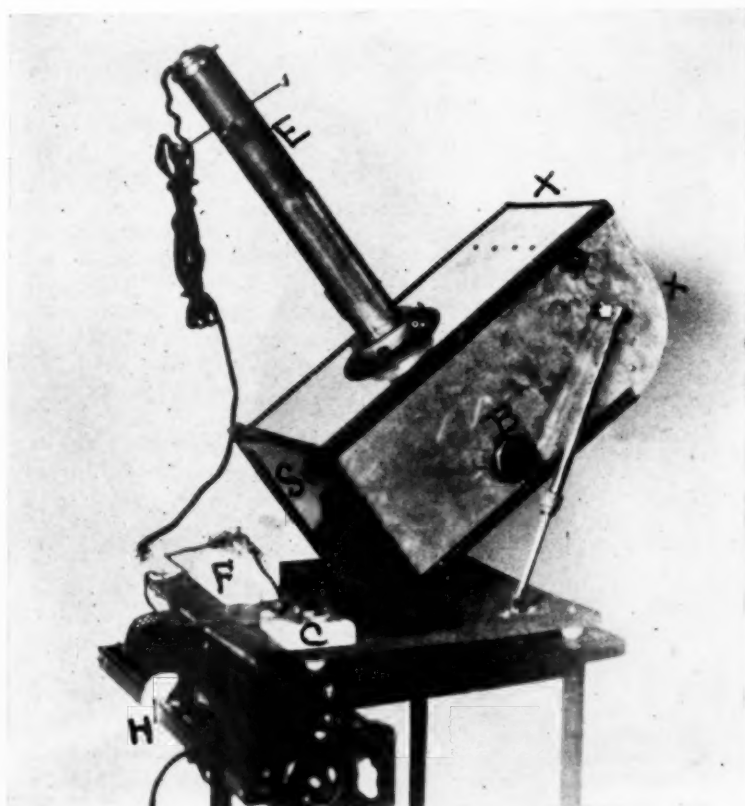


Fig. 2. Shows the operator's or posterior aspect of the eikinoscope.

- X.—Side shields.
- B.—Mirror-turning dial-knob.
- E.—Lamp housing.
- H.—Rheostat.
- C.—Control switch.

F.—Small commercial electric sign flasher. This is of the thermic type and operates by the working of the switch lever by the heat of the surrounding coil and its subsequent cooling as the current is transferred to the light circuit. It is practically noiseless.

S.—Shows the outer aspect of the screen.

its center a "first surface" mirror (60 by 80 mm.), long axis vertical was mounted so that it could be rotated through 90° about a transverse line slightly above its horizontal meridian^d by turning the axle with the dial knobs. Each ocular was covered by a dia-

^d The pivoting is above the horizontal so as to tip the mirror out of the line of vision to the screen.

sliding tube a "slit-lamp" bulb was placed in such a way that it could be adjusted from side to side or up and down by thumb screws so as to center the filament. It will be noted that once the rheostat was set the intensity of light on the mirror could be varied by sliding the tube without disturbing the quality of the light.

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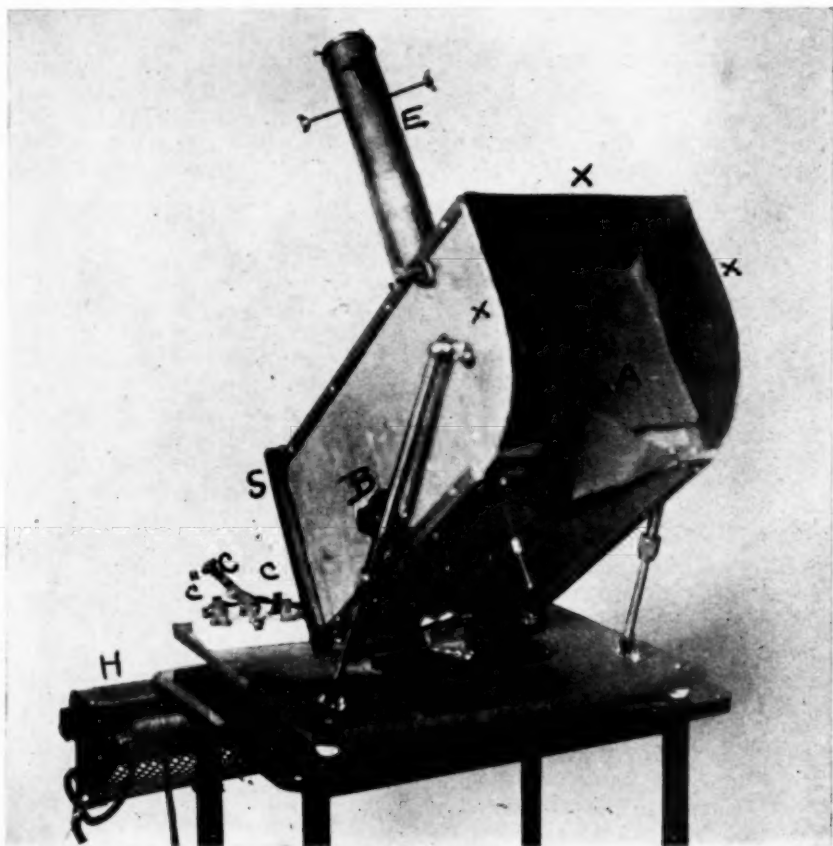


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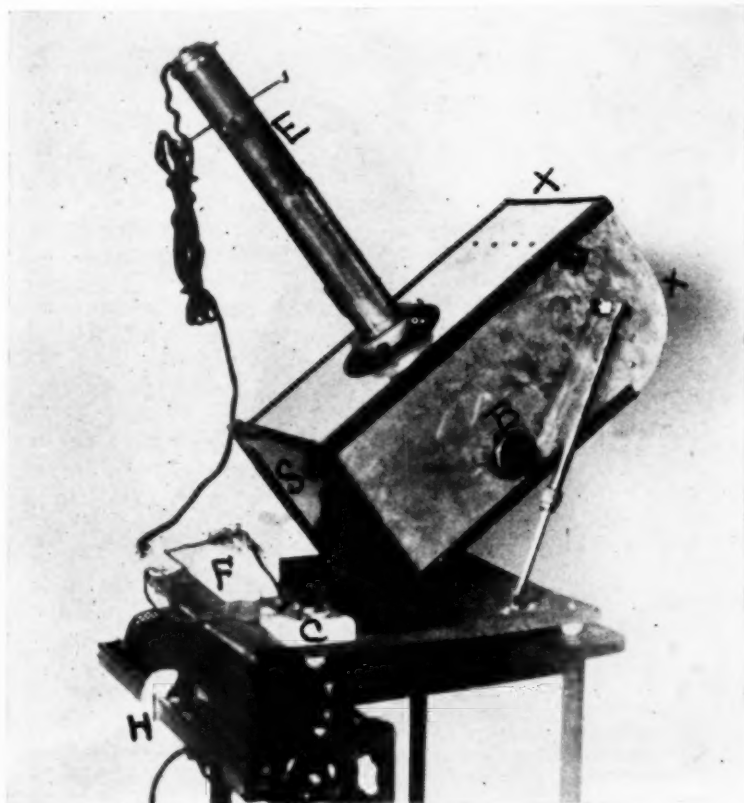


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Attached to the top of the box was a black cloth hood-like device which could be dropped over the patient's head to exclude all extraneous reflexes. (Discarded as unnecessary in the most recent tests.) The box itself, except the screen, was lined with black velvet.

The following procedure was finally adopted:

1. The patient is told to avoid looking at lights or bright objects while



Fig. 3. Shows the screen. This is a photographic print of the letters and square. It is produced photographically to insure letters and square of uniform contrast—to standardize the background and permit washing when soiled.

preparations for the examination are being made and while instructions are given.

2. He is then seated comfortably before the instrument so that his forehead rests on the head block at its top and the eye under examination is immediately before the ocular. The eye not under observation is shielded by closing its corresponding ocular, care being taken not to make pressure on either eye.

3. A period of adaptation, to allow all previous impressions to be erased

from the retina, is allowed, while the eyes are kept closed.

4. The mirror is so adjusted that the light will be deflected upward into the patient's eye.

5. The light is turned on and he gazes at the center of the ground-glass window. (A small black dot helps fixation.)

6. After the exposure period is over the mirror is turned so that the light will be projected downward upon the screen at the bottom of the box.

7. The patient is directed to fix any convenient letter, as *E*, at the center of the square on the illuminated area of the screen. The light is then flashed on and off by turning an ordinary switch or by means of a commercial "electric sign flasher". If the black square confuses the subject, any letter may be used. The square is best when the after-image is dense, and the gaze may be directed to another letter as the after-image fades. (Fig. 3.)

8. The patient notes the gradual fading of the gray after-image which is apparently superimposed on the letter on which he is fixing.

9. A stop watch is used to determine the time intervals.

10. A five minute interval is allowed before the second eye is tested, and care is taken that the patient shall be undisturbed and as comfortable as possible during the entire examination.

The description makes this very simple test seem quite elaborate, but it will be noted that fifteen minutes will include the preparations and the testing of both eyes.

The intensity of the light from the lamp source is checked from time to time by a foot-candle-meter* placed at the level of the screen after that surface has been removed. By this contrivance the primary light and the reacting light (that flashed on the screen) are standardized at the same time and always bear exactly the same relation to each other.

These studies have thus far been conducted on fifty subjects, or one hundred eyes, not including those herein tabu-

* Made by Edison Lamp Works, General Electric Co., Harrison, N.J.

lated. Much of the material so collected has of course no permanent value.

With the clinical application ever in mind, the following principles seem acceptable for tests conducted under the conditions here stated:

1. Young adults as selected according to the planned outline are satisfactory subjects.

Dark adaptation and light adaptation in the ordinary meaning of the terms do not play an important part (under the conditions of these experiments) but means must be taken not to expose the patient to unusually strong light or prolonged darkness.

3. The primary stimulus:

(a) Light transmitted through a

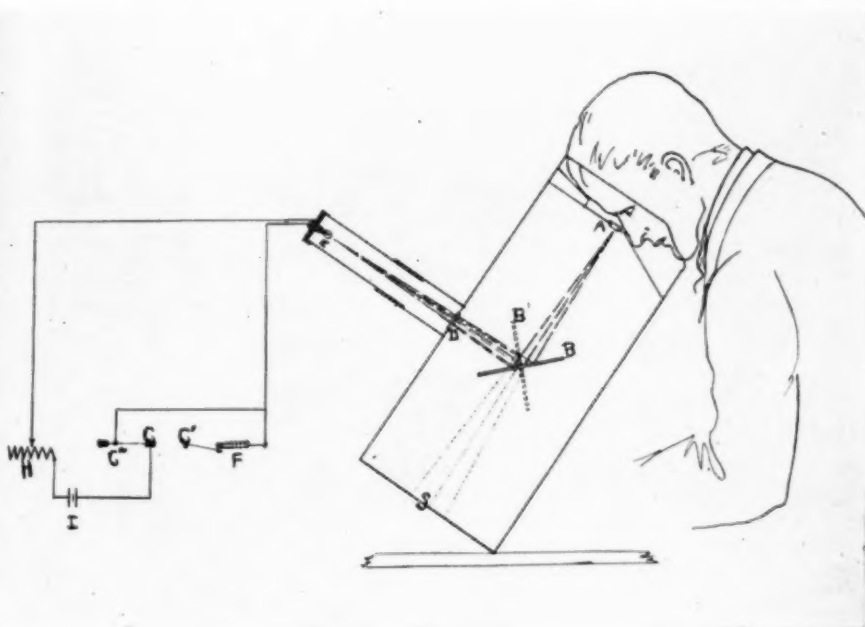


Fig. 4. This is a diagrammatic representation of the eikonoscope to illustrate the principle of operation. The source of both primary and reacting stimuli is the slit-lamp bulb (E), selected because of its long life (when not overloaded).

The light passes divergently through the ground glass window D and impinges on the mirror. When the mirror is in the position B the image of the window is seen through the ocular A, but when the mirror is turned on its axis to position B' the visual line then passes by its edge. The subject then sees screen S when the flasher F allows the current to pass. In this way the distance from D to A by way of the mirror is the same as the distance D to S by way of the

mirror, and the image of the window being seen in the mirror apparently has the same position as the screen. Its after-image is thus the same angular size as the reflected image appeared to be, and so avoids confusion of interpretation by the subject and does not tend to make the after-image less intense.

When the screen S is withdrawn and the photometer inserted, a single reading determines the actual as well as the relative intensity of both primary and reacting stimuli.

(For the sake of diagrammatic simplicity the source of current is indicated as a battery at I.)

2. It is not necessary to keep the patient in the dark for adaptation. Eradication of any previous after-image will take place if the eyes are kept closed five minutes before the test is made. (Of course a pathological case would need special consideration in this relation, and a number of tests made to determine it.)

finely ground glass window from a slitlamp as mounted in this instrument was satisfactory as giving a sharply defined and unfatiguing source. The glowing filament could not be well standardized for many reasons. Reflected light required too long fixation

and there was confusion when secondary after-images arose from the screen fixation during the period of fading.

- (b) The disciform shape of the stimulus was found most satisfactory: other shapes, as letters, numbers, or particularly figures of any sort with acute angles lost their characteristics so quickly as to make it difficult to discuss them with the subject.
- (c) The angular size of the primary stimulus as used in the final instrument was satisfactory. Slight variations in size seemed to make no difference, but very small windows gave ill defined reflexes and larger windows were difficult to illuminate uniformly. Much variation in the size of windows also produced unsatisfactory relations between the primary and reacting stimuli.
- (d) The duration of the primary stimulus required particular attention. Every time the slightest alteration was made in the instrument a new series of cases had to be studied. Fifteen seconds, as finally accepted, seemed best adapted at this time for clinical needs.
- (e) It was found that the 1/10 foot candle seemed to offer the most practical intensity (as here measured). It is conceivable that a scale on the lamp housing will have to be provided to allow measured increase or decrease in intensity for pathological cases when the rate of recovery is greatly altered. Such a procedure would avoid a prolonged test and yet maintain the standard relations. A curve is yet to be worked out for the fading time of various intensities as produced under the conditions of these experiments.

- (f) Colored primary stimuli are not practical because, 1st, the color sense would have to be previously tested. 2nd, the color sense is so easily disturbed. 3rd, color intensity cannot be satisfactorily standardized. 4th, the after-images are very complex and need lengthy explanations and notations for their interpretation.

4. The reacting stimulus:

- (a) Reflected light proved satisfactory and offered the advantage of using the same light for primary and reacting stimuli. When transmitted light was used, its ratio to the primary stimulus became disproportionately complex and unsatisfactory.
- (b) The shape of the stimulus was satisfactory as its reflected light being divergent was spread uniformly over a sufficiently wide area to light the major part of the screen. The rectangular form was not easily confused with the disciform of the primary stimulus or after-image.
- (c and d) The angular size of the stimulus as obtained by the present instrument maintained a satisfactory relation to the primary light and yet neither too intense nor too dim a background for satisfactory contrast of the after-images.
- (e and f) There seems to be no acute limit between the rate of flashing of the primary stimulus or the relation of light to dark phase. The rate of the flashing did not influence the fading of the after-image provided the changes did not come so far apart as to miss the time of its fading by more than a second or two. Even quite rapid hand flashing was not detrimental, but it distracted the patient's attention or was confusing.

A satisfactory rate was 30 to 60 times to the minute.

- (g) Colored stimuli were objectionable for the same reasons as for the primary stimulus.

5. The negative after-image was adopted because

- (a) the white background was easiest to standardize and easiest to replace. This contrast makes the negative after-image stand out almost as a black hole in the white paper when the flashing first begins.
- (b) this phase lasts longer and is more vivid than the positive after-image.
- (c) it is easier to discuss the negative after-image with the patients and is less alarming to them than were a blazing glare to result after gazing at the primary light.
- (d) this dark after-image is not easily confused with the light after-image which may arise from the fixation letters or square during the dark phase.

6. Central fixation of the primary light and screen were found satisfactory and easiest to describe to the subject. (These studies when directed to the peripheral retina may be even more interesting.)

7. The scale of letters on the screen and square about one of them makes it easy for the subject to fix his eye quickly before the after-image has changed much. In some instances the letters may be at first completely obscured by the after-image. This makes the fading more obvious. The black square was adopted to aid fixation in eyes later to be met with reduced acuity of vision. The different letters may be used at will for fixation with minimum effort and loss of time.

8. Testing one eye does not seem to have any influence on the untested eye as regards the duration or intensity of the after-image, when the second eye is tested immediately afterward.

9. There seems to be no noteworthy difference in the fading time of blondes as compared with brunettes.

10. The rate of fading shows no material difference between the sexes.

The following tabulation of twenty eyes (ten individuals) summarizes the final series as tested by the present instrument (eikonoscope) under the conditions above outlined:

Number	Color of hair	Age, years	Sex	Nationality	Nature of refraction	Duration
1.	Light brown	37	M	U.S.	+0.50 sph. +0.50	2' 50" 1' 35"
2.	Light brown	33	M	U.S.	+1.00 sph. +0.75 sph.	1' 32" 2' 30"
3.	Dark brown	26	M	U.S.	Emmetropia	2' 2" 2' 8"
4.	Dark brown	35	F	U.S.	+0.50 sph. +0.50 sph.	1' 4" 1' 15"
5.	Medium brown	25	F	U.S.	-1.25 sph. -1.25 sph.	1' 27" 1' 8"
6.	Medium brown	28	M	U.S.	Emmetropia	1' 34" 2' 34"
7.	Light brown	22	F	U.S.	+0.50 sph. +0.50dc.90° O.U.	1' 7" 1' 9"
8.	Light brown	37	M	U.S.	Emmetropia	1' 42" 1' 27"
9.	Light brown	32	M	U.S.	+2.00 sph. +1.00 cy.ax ×90° O.U.	1' 32" 1' 55"
10.	Auburn	37	M	U.S.	+2.00 sph. +2.00 sph.	1' 47" 1' 30"

In this series the period of exposure was fifteen seconds, the average rate of fading 1 minute and 41 seconds; the minimum being 1 minute 4 seconds, and the maximum being 2 minutes 50 seconds.

The greatest variation between both eyes of a single individual was 1 minute 15 seconds, and the smallest 2 seconds. The average age of the subjects was 31 years, the youngest being 22 and the oldest 37 years.

In order to give a rough idea of the clinical relation of the pathological subject to those above, the following cases are outlined.

Prolonged time: R. S., f., aged 36

years, white. Jewish housewife suffering for the last five years from a low grade retinitis. There was a complaint of night blindness. Tested under the conditions of the above series (see table): *fading time*, O.D. 7 minutes, O.S. 12 minutes.

E. F., m., aged 31 years, married, colored. An atypical type of retinitis associated with perivascular pigmentation, the most characteristic complaint being night blindness. *Fading time*, 56 minutes (only had one eye).

Reduced time: G. W., f., aged 47 years, married, white. Chronic glaucoma (previously operated by iridectomy). Well established optic atrophy. Normal acuity and tonometric readings at this time. *Fading time*, O.D. 26 seconds, O.S., 36 seconds.

M. W., f., aged 35 years, single, white. Central choroiditis, progressive optic atrophy of the left eye. *Fading time*, O.D. 1 minute 12 seconds, O.S. 40 seconds.

Conclusions

(1) We are only justified in saying that this study has so far developed an instrument which seems to be practical for the clinical study of the after-image if the outlined procedure be carefully followed.

(2) The average minimal and maximal time of fading can only be accepted

as representing a reasonably accurate standard for the age period of the subjects as shown in the above table.

(3) There is such a marked difference between the limits of this standard and those found in certain definite pathological conditions as to encourage further efforts.

It is proposed to continue this work of standardization until a satisfactory norm can be set and then to apply the procedure to the study of various pathological conditions. Perhaps a greater mass of material will show that this material is worthless or needs modifying, or perhaps it will supply an easy and practical means of diagnosing certain pathological conditions at present obscure or undiagnosable.

What relation the after-image studies will show to the light sense is not clear at this time. Perhaps we can establish a relation later on or perhaps not. There are numerous points of similarity. Speculations as to the significance of these studies are very interesting but are reserved for a later report when more experiments have been made.

It would be satisfactory could we state that this test represents a means of determining the metabolic rate of the retina, but such a conclusion does not seem justifiable at this time.

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VISUAL FIELD CHANGES IN ARTERIOSCLEROSIS

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In cases of arteriosclerosis, the authors have found enlargement of the blind spot for blue, and contraction of the peripheral field for blue. It is suggested that reversal of the red and blue fields occurs far more frequently as the result of arteriosclerosis than from any other cause.

The changes in the circulatory systems of the eye produced by arteriosclerosis and high vascular tension are, in most cases, accompanied by definite and typical visual field changes. The following article considers the changes found in a number of cases of arteriosclerosis, which changes seem to be characteristic of that state. Little has been found in perimetric literature concerning these cases and, considering the nature of the changes, the findings should be of general interest. Attention was first drawn to these cases through the fact that in them almost invariably there was found a contraction of the peripheral field for one degree white.

In view of the fact that in these cases arteriosclerosis was present and any other condition which might result in contraction of the form field was absent; it was concluded that the arteriosclerosis was the causative factor. The study of a number of cases of arteriosclerosis, some of which were accompanied by refractive errors but none of which were accompanied by any other eye condition than the changes due to arteriosclerosis, proved that this conclusion was correct.

The peripheral field contraction in these cases is very similar to that found in moderately high myopia or in early lens changes. If but slight interference with nutrition has occurred, the contraction may be noticeable along the temporal side of the field only and may not be very marked, the temporal side being lessened by about ten to fifteen degrees. With greater interference with nutrition, the contraction is more marked, including the upper temporal and lower temporal portions of the field. Very pronounced interference with nutrition is followed by concentric contraction of the field. In most cases, regardless of which part of the field is affected, there is a contraction of from ten to twenty degrees, although it may be as

much as twenty-five degrees. In cases studied so far it has never been more than this.

The contraction is usually bilateral and in general about alike in the two eyes, but it is sometimes more marked in one eye than in the other. The field may be contracted only for the one degree white or so-called normal object, and remain normal in outline for four degrees white, or may show a contraction to both one degree and four degree objects, the isopter outlined with the latter being somewhat greater in extent than that outlined with the former. This peripheral form field contraction may be present without any other change in the field or it may be accompanied by the changes in the blue field described below. It is to be emphasized that the red field is always normal. The contraction of the form field in these cases seems to be due to involvement of the retinal vessels, the greater the involvement of the retinal vessels, the greater being the contraction of the form field. The following illustrations show typical cases:

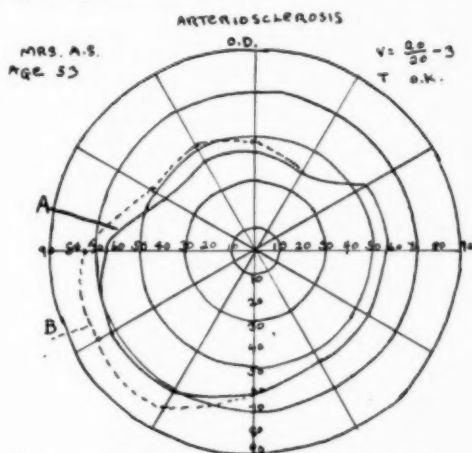


Fig. 1. A, field for 1° white. B, field for 4° white.

In a number of other cases of arteriosclerosis, some with, others without,

peripheral field changes, we have found the two following things regularly occurring:

1. The blind spot is definitely enlarged for blue but remains normal in outline when white or red objects are

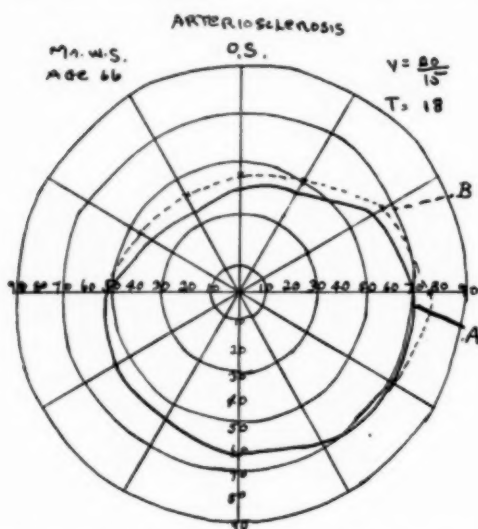


Fig. 2. A, field for 1° white. B, field for 4° white.

used. On the Ferree-Rand perimeter the average normal blind spot may be exactly outlined with a 0.17 degree white object and one degree red and blue objects. If objects of a smaller size are used, results usually seem to be questionable. In those cases of arteriosclerosis so far studied, where blind spot changes occur, the blind spots give a normal outline for 0.17 degree white and one degree red, but a much larger outline for blue. The blind spots may show an enlargement to a one degree blue object only or they may be enlarged also for a two degree or even a four degree blue object. That is, the depression in retinal sensitivity of the areas around the blind spots may vary in severity. The limits as outlined may extend from five degrees to twenty degrees beyond the normal limits. The enlargement is usually circumpapillary, although sometimes it is greater above or below than it is horizontally.

2. The field for blue is markedly contracted, often extremely so, falling within much narrower limits than the field for red, which remains normal. It

may fall circumferentially within the ten or five degree circle entirely or may extend along the temporal side out to the fifteen or twenty degree circle. In other cases the blue field may be cut through either above or below the blind spot, as in the illustration below comparing the arteriosclerotic case with the tension case. Changes in the retinal reaction to blue usually indicate choroidal changes or changes in the retina external to the ganglion cell layer. These changes in the reaction to blue in arteriosclerosis appear to be indicative of choroidal involvement and are due to impaired nutrition resulting from interference with the choroidal vascular system.

Thus in arteriosclerosis we have two distinct types of field changes which show the relative involvement of retinal and choroidal systems. It would seem that changes in the retinal reaction to blue with normal peripheral field limits would indicate greater choroidal involvement, peripheral field change without changes in the reaction to blue would show relatively greater retinal vessel involvement, and both types of field change would mean the implication of both systems. Enlargement of the blind spot for blue is usually accompanied by peripheral contraction of the field for blue, although in cases where the vascular changes are not very pronounced it may occur alone. The arteriosclerotic blue field contraction is always accompanied by the enlarged blind spot for blue. This differentiates it from contracted blue fields caused by other conditions.

These types of field changes are illustrated as they most commonly occur.

The work on these cases was done on the Ferree-Rand perimeter under good perimetric conditions. The blue used was the Heidelberg flower paper, a clear good color. Errors of refraction were corrected. The majority of patients whose only ocular changes were due to arteriosclerosis had 20/20 and 20/15 vision. Fields taken of those having arteriosclerosis but with other conditions also present showed typical arteriosclerotic changes which could be differentiated from the changes caused by the other conditions. Their vision ranged

from 20/15 to 20/200, according to the condition present. Ages ranged in general from fifty years to seventy-six years, although a few of the patients were in their early or middle forties.

they are characteristic, it seems that all patients who have arteriosclerosis should have their fields taken as a matter of routine, for comparison at a later date in case of need. Thus any additional

ARTERIOSCLEROSIS

MISS M.M.
AGE 58

O.D.

$V = \frac{20}{20}$
T O.K.

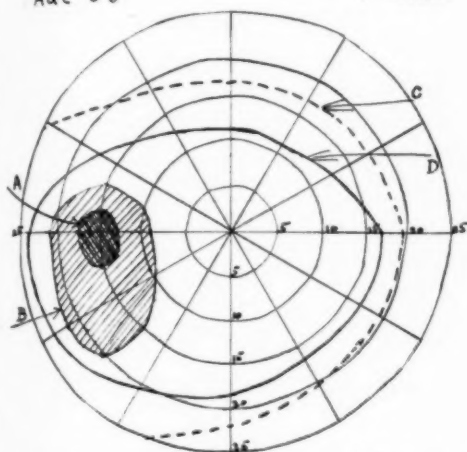


Fig. 3. A, blind spot for 0.17° white and 1° red. B, blind spot for 1° blue. C, 1° red field, extends temporally to 35°. D, 1° blue field.

ARTERIOSCLEROSIS

MRS A.S.
AGE 53

O.S.

$V = \frac{20}{20} - 3$
T O.K.

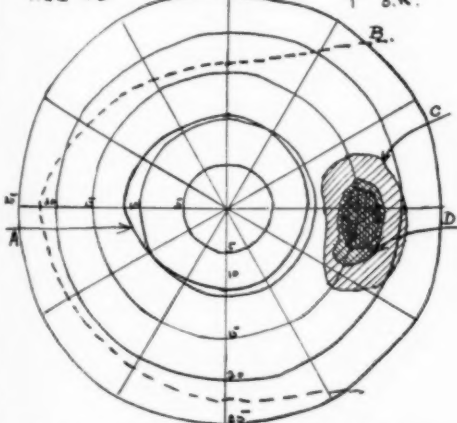


Fig. 4. A, 1° blue field. B, 1° red field, extends out to 40°. C, blind spot for 2° blue. D, blind spot for 0.17° white and 1° red.

It having been found that these changes do exist in all the cases of arteriosclerosis in which fields have been taken so far, and having found that

ARTERIOSCLEROSIS

MR. W.S.
AGE 66

O.S.

$V = \frac{20}{15}$
T 13

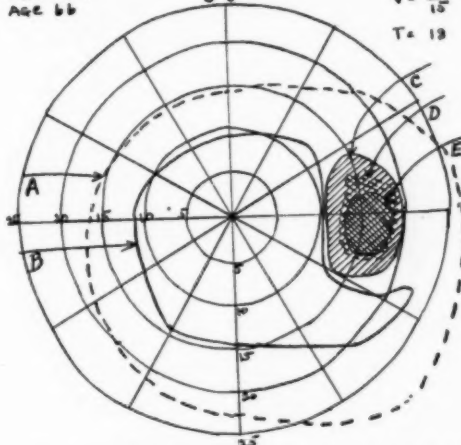


Fig. 5. (Weeks and Landis) A, 1° red field. B, 1° blue field. C, blind spot for 0.17° white and 2° blue. D, blind spot for 1° red. E, blind spot for 0.5° white.

TENSION

MISS M.K.
AGE 59

O.S.

$V = \frac{20}{30}$
T 40

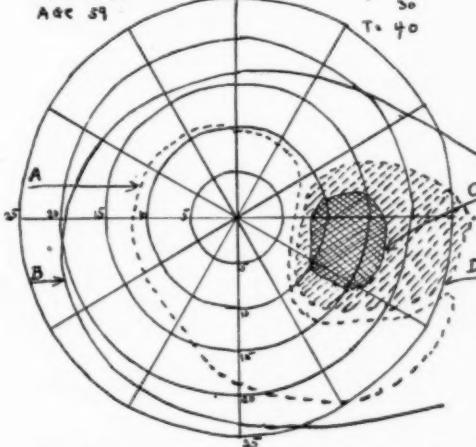


Fig. 6. A, 1° red field. B, 1° blue field, extends temporally to 50°. C, blind spot for 0.25° white and 1° blue. D, blind spot for 2° red.

changes found subsequently would not be confused with those whose prior existence and definite etiology were matters of record.

The field studies here described are of interest for four reasons:

1. They present another reason for reversal of the color fields in addition to the reasons usually assigned, namely hysteria or certain psychic changes. Moreover the reversal of red and blue fields occurs far more often as a result of arteriosclerosis than it does from any other cause.

2. They show an interesting contrast in color field changes between early glaucoma and arteriosclerosis. The changes in reaction to blue in arteriosclerosis are similar to the changes in reaction to red frequently seen in early glaucoma.

3. They add another reason for careful blind spot study, because the blind spot change is typical and definite and need not and must not be confused with

the changes produced by numerous other conditions.

4. They bring out another condition which may cause contraction of the peripheral field for white.

5. They demonstrate another type of case in which vision may be 20/20 or 20/15 although changes in retinal reaction are such as to warrant field study.

Routine perimetric examinations of cases showing arteriosclerotic changes without other ocular disturbance exclusive of errors of refraction have been made during the past year, since the time when our attention was first drawn to the fact that such changes in retinal reaction were present in these cases. The considerations here set forth are the result of repeated findings.

20 East Fifty-third street.

ROTOR-DIAL CHART FOR EXTRAOCULAR MUSCLE PARALYSIS

SAMUEL H. WILKINS, M.D.

BOSTON

The rotor-dial chart described is intended to furnish a simple and convenient guide for testing and diagnosing extrinsic muscular paralyses. The opposite sides are applied respectively to objective and subjective indications.

It has always been rather a task for me, and I believe also for many, to keep in mind the different conditions present in cases of extraocular muscle paralysis. In making the tests and examinations to determine the muscle or muscles involved except in the simplest cases I have often found difficulty and confusion.

Some of the principal factors responsible for this are the following: First, although the subject is carefully covered in most textbooks on ophthalmology, and a careful study will give a knowledge of the conditions present, yet all the facts in their proper relations are not only difficult to appreciate but especially hard to remember, and one cannot always depend upon logical reasoning, which presupposes a more or less thorough knowledge of the subject. Second, authors agree as to the principal conditions present in extraocular muscle paralysis, but an element of confusion exists because they do not all show the relations of the true and false images from the same point of view. Third,

the number of muscles involved, said muscles operating in pairs or sets some of the right and others of the left eye, adds a complicating and confusing factor. Finally, the fact that the diagnostician or examiner and the patient often face each other while testing so that their positions are reversed with respect to right and left, introduces a confusing factor toward error on the part of the examiner in making his observations and notes or in writing his report.

Beside these there are other confusing factors, which are pertinent to cases under examination or discussion such as multiple paralysis, shifting fixation, secondary deviation, preexisting phorias, and old contractures, which should be recognized and appreciated since their presence interferes with any method of examination, but are less important if the main facts are well understood and at command.

For these reasons I was led to invent some sort of arrangement or contrivance, so constructed that the principal

signs and symptoms present in cases of uncomplicated or simple single muscle extraocular paralysis might be quickly, easily, and correctly grouped. I made a sort of chart, herein shown, a dial chart apparatus of simple construction and mode of operation, for use by an examiner in cases of extraocular muscle paralysis, as an aid in ascertaining the name of the muscle that is paralyzed, the relative position of the false and true images in either lateral or vertical diplopia, the character of the strabismus or deviation of the affected eye, the position or turning of the face in lateral diplopia, and the face position and the usual tilting of the head to one shoulder in vertical cases to eliminate the double images.

In designing the chart, I had in mind the advantages of simplicity, portability and durability; simplicity so that anyone with some idea of the conditions present in muscle cases could easily understand and use it, the general directions being sufficiently and clearly given, following the accepted methods of procedure in the examination of extraocular muscle paralysis; such size that it could be easily carried about and easily handled; and constructed of metal so that it would be durable, and with minimum of wear less liable to error after prolonged use.

The working model of my chart consists of two pieces of cardboard or side plates held together at each end with pins or eyelets, which pierce discs rotatably mounted. The names of the extraocular muscles, the type of strabismus or eye deviation, false images, face positions in lateral diplopia, and face turning and head tilting in vertical diplopia are printed on the dials, in such a way and in such position that by following the directions given on the front or back of the side plates of the chart, objective and subjective respectively, these data or conditions, which make up the diagnosis, appear through "cut-outs" in these side plates, according to the way in which, by directions given, the discs are rotated. The directions are printed legibly on the front and back and are made to follow the

generally accepted method of procedure according to Duane.

There are, as may be gathered, two sides to my chart, which I have called a rotor-dial chart for extraocular muscle paralysis, one side objective for the excursion test, and the other side subjective for the diplopia test. The objective side is used to determine the muscle affected and the type of strabismus or direction of eye deviation, by observing the proportionate excursions of the patient's eyes in unison as the gaze is directed in the six diagnostic directions—out to the right, out to the left, up and out to the right, up and out to the left, down and out to the right, down and out to the left—by noting the way one eye lags behind the other. Moving one or the other dial on the right or left side as the case may be, according to the directions given, the name of the affected muscle is given as well as the character of the strabismus or eye deviation.

These facts appear through cut-outs as the dial arrows are moved to designated positions. In making the tests with the subjective side, the patient, head erect and face front, with a red glass over the right eye, faces the examiner, who moves a light, or bar of light, in the above stated six diagnostic directions, which light the patient follows with his eyes. The examiner then moves the dial arrow to designated positions, according to the patient's answers in respect to the position of images in the different fields. When so moved on the lateral side, which deals with lateral types of diplopia, according to the patient's answers in respect to the position of the double images, in lateral fields, the name of the muscle involved is revealed in a cut-out as well as the relative position of the false and true images and the position of the face turning to eliminate the diplopia. When the dial on the vertical diplopia side of the chart is moved according to directions given, and in accordance with the answers of the patient in respect to the position of the images in these vertical types of diplopia the diagnosis or muscle

affected is given, as well as the relative position of the false and true images and the way the patient turns his face and usually tilts his head to one shoulder to eliminate the diplopia.

When, during the excursion test on the objective side and especially when under cover, one eye, apparently the sound eye, tends to shoot ahead of the other eye, which seems to lag in a given direction, it is possible, by following directions, to quickly obtain the name of this associate or yoke muscle, the muscle in spasm, causing a secondary deviation of the sound eye.

The so-called image stations both lateral and vertical are positively arranged, that is, in them the false and true images appear on the chart as seen by the patient. The true images are fixed, while about these true fixed images are cut-outs, the false images falling in turn in the openings by following directions according to the conditions in a given case. The vertical image stations are so arranged that the proper position and correct general tilting are given in each instance. The false images are colored red and yellow to correspond with the eye covered with a red glass and the uncovered one respectively.

The directions on the chart are explicit, and in conjunction with the sheet of suggestions accompanying the chart no difficulty in its use should be experienced so far as the manipulation of the chart itself is concerned. On the chart and also on the instruction sheet I have added some of the well known axioms, such as: 1. "The paralyzed eye lags in the field of action of the paralyzed muscle." 2. "The false image is always projected in the line of, and the diplopia is present and increases in the field of action of, the paralyzed muscle." I have suggested on the chart the advisability of recording any diplopia center front and in the four cardinal positions, for obvious reasons, and have warned the examiner to be on the watch for secondary deviation of the sound eye, and to eliminate the different forms of conjugate paralysis and convergence and divergence paralysis. I have also offered numerous suggestions relative to shifting fixation, amblyopias, etc., and the advisability of careful preliminary test-

ing to eliminate some of the confusing conditions which might be present. A careful eye history and examination are advised. Such tests as monocular excursion, false fixation pointing, alternate covering for false image detection, and cover test for secondary deviation, as well as shifting of red cover glass in certain cases, are brought to the attention of the examiner.

I feel that my ocular muscle chart will not only help to simplify the regular routine of the ophthalmologist, but will be a definite aid in personal review and study and also useful for teaching purposes. I feel that the examiner, after becoming acquainted with the chart and having visualized the conditions shown, will have acquired therefrom a better understanding and a mental picture of the conditions in such cases and will be stimulated to further investigation. It will also help the examiner to approach the diagnosis in different ways. In complicated and complex cases, which are often difficult to diagnose, this instrument will be of assistance in conjunction with other methods of investigation. It may be used as a means of determining the diagnosis in a given case directly or from the readings taken on the tangent screen. After the student or examiner masters the facts and conditions shown on the chart which are present in single muscle cases, he will be certain to have a better understanding of extraocular muscle paralysis even in the complex and complicated cases.

It must be understood that possible variations in extraocular paralysis may alter the usual conditions, and in complex cases a diagnosis from the rotordial chart is likely to be incorrect. Thus as suggested on the chart, the diagnosis and findings are to be accepted as presumptive. The chart, however, offers a new and interesting way to become acquainted with the principal, usual, and more common signs and symptoms in single muscle extraocular paralysis, and it is hoped that by its use an added interest in the study of extraocular paralysis may be stimulated, and that it may be useful in simple cases, and, with other means, a help to diagnose the more difficult and complex ones.

The writer wishes to express his indebtedness for the valuable suggestions and ideas obtained from the chapters on ocular muscles in the various standard books on ophthalmology, including the recent volume on extraocular muscles by Peter. He wishes, also, to take

the opportunity here to express his indebtedness to Dr. Walter B. Lancaster, Dr. George S. Derby, Dr. W. Holbrook Lowell, Dr. J. Herbert Waite, Dr. Benjamin Sachs, and others for advice and suggestions so kindly offered.
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THE SELECTION OF TEST TYPE FOR REFRACTION

S. JUDD BEACH, M.D., F.A.C.S.

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The Maltese cross was found to be especially serviceable in testing for astigmatism, on account of its symmetry and the large number of acute angles which it presents. The most serviceable Maltese cross was found to be that in which the component lines had a thickness under one tenth of the total height of the cross. Read before the Section on Ophthalmology of the American Medical Association, May, 1927.

The ophthalmic test card has never been satisfactory. It is true that modifications were early suggested to increase the precision with which it might be used to ascertain keenness of sight. Yet as a means of fitting glasses it has been bettered but little. Patients dislike it. They protest that they cannot tell whether a lens improves or impairs the type; that they know their replies are wrong; that they dread misleading the physician into prescribing incorrectly; and altogether they

is struggling to carry in his memory and compare the changing appearance of the letters through different glasses. Manifestly, a test character is wanted the distortion of which is unmistakable as soon as it is out of focus. The deformity, furthermore, should become rapidly exaggerated as the focal error increases.

At the November, 1926, meeting of the New England Ophthalmological Society, I made a preliminary report of some experiments to determine

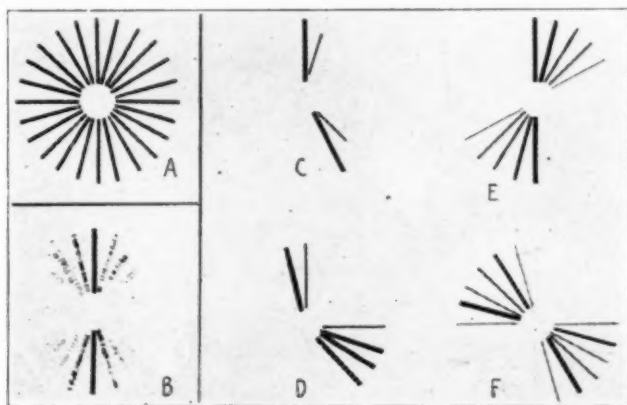


Fig. 1. Some types of irregular astigmatism: A, actual appearance of astigmatic dial; B, same as seen with regular astigmatism. C, D, principal axis deflected, also duplicated, as it crosses. E, regular fading of radii clockwise of principal diameter, but obliteration counterclockwise; F, duplicate principal axes in same quadrant, not adjacent.

would rather have their teeth filled than their glasses changed.

Even a seasoned examiner is conscious of the strain on the patient who

which characters are soonest and most markedly altered by errors in refraction. It was shown both by observations at the trial case and with the camera that

the most responsive characters have lines in a multiplicity of directions, symmetry and, above all, acute angles.

Multiplicity of lines: In theory, a simple cross is the ideal test figure. If one of its members is turned to the sharpest diameter, then adding cylinders till the other equals it should automatically correct the astigmatism. Provided the eye has been properly relaxed, simply adding spheres to improve the definition should furnish the exact correction. Yet, in practice, all forms of crossed lines and gratings have been disappointing. This is said to result from the frequency with which patients are found to have irregular astigmatism. When the axis of greatest

diameter. Seventeen that occurred in succession were discussed in the preliminary report. They fell into the groups illustrated in figure 1. In one, the dominant axis bends as it crosses the center, lying in a different diameter above from that below; the second fades regularly, clockwise of the main axis but is not balanced in the opposite direction; in the third, two diameters, equally distinct, occur in the same quadrant but are not adjacent. Incidentally, these figures show how misleading may be the observations made with an astigmatic fan. This is only one half of a clock dial. Hence any irregularity in the absent half would be unsuspected. While such an un-



Fig. 2. Actual appearance of crosses and type. (To be compared with figure 3.)

curvature is not at right angles to that of least curvature, cross lines that are at right angles cannot be made to correspond. Such irregular astigmatism is commoner than I had been led to believe. In making diagrams of the astigmatic dial as described by patients, I found many without any single sharp

broken series of patients with marked irregularity is exceptional, yet the condition is common. Obviously, a figure limited to lines in two directions does not suffice for examining these patients. Furthermore, I doubt whether any figure lacking acute angles can give perfect satisfaction.

The clock dial, which has both lines and angles, is too large to be taken in at one glance and apart from its function as an astigmatic chart has never proved useful as a test type. It also does not have natural boundaries by which height may be compared with width. The Maltese cross, taken as an example because it has proved the most serviceable of all the designs tried, has height and width identical. Any squeezing, stretching or tilting becomes immediately evident. This is not true of ordinary capital letters. To make them

balance in length and direction all corresponding members. Most letters, on the contrary, are identified by lines in some one direction. E, for example, is a horizontal letter, being recognized by its three lateral members. The hazard of relying on such characters was illustrated by a girl whose astigmatism seemed to fluctuate during the examination. She accepted at the test card cylinders at regular axes, sometimes half a diopter strong; then immediately afterward she preferred a diopter and a half. Her vacillation



Fig. 3. Cylinder "off axis"; type begins to blur, especially at acute angles; crosses all blurred, small one unrecognizable.

square they must be so broadened as to retain little resemblance to familiar print. Patients often say, "With that glass, letters look taller, without it, fatter. Neither way makes them better". All upper case type are customarily narrow and high. Some letters, like V, are more so than others. When they are square they cannot be expected to look natural.

The Maltese cross is also symmetrical in the sense that all its members exactly

turned out to depend on the letter on which she fixed. E looked better with the weak cylinder and N with the strong. E was most readily recognized when its horizontals were exaggerated, instead of when it was clearest, while the reverse was true of the N. Her final prescription was a 0.75 diopter cylinder. It entirely relieved dizziness and allied symptoms due to a previous cylinder, twice as strong, that she had mislaid some one to order.

Acute angles: Of the multitude of designs fulfilling the foregoing requirements of symmetry and a variety of lines, only one has demonstrated any great advantage over the ordinary test type. This, as just said, is the Maltese cross. It has lent my examinations a most unaccustomed facility. The reason, as shown by the camera, is the sensitiveness of the acute angle as an indicator of trifling errors. In taking these photographs, the conditions of an examination for glasses were imitated by making a camera astigmatic. A minus 0.50 diopter cylinder, axis 90° , was placed before the lens. This was corrected by a plus 0.50 diopter cylinder, which was then turned increasingly off axis. At intervals, negatives were made of crosses and test cards side by side. As appears in the illustrations, the crosses are blurred before any



Fig. 4. Cylinder slightly "off axis"; type still clear; crosses blur at angles.

change can be seen in the type. By the time the letters are distorted, the crosses have become unrecognizable. On careful examination of figures 3 and 4 it will be seen that the first and greatest change takes place at the acute angles. As one patient said, "it looks as though the ink had all run into the corners of the 'iron cross' ". This appearance is also found in the acute angled letters, but in the crosses it is multiplied be-

cause there are twelve sharp angles to compare with one or two in the letters. The four central ones, moreover, are extremely pointed, more so than any in the type.

Size and proportion: It cannot be said that any valid reason holds us to the one to five relationship between the thickness and length of the lines composing test letters. It is not now believed that the gaps in the test type, described as the "minimum separable" actually represent the sizes of retinal elements. Since whatever proportion we accept will be purely arbitrary, we might as well select the one that is soonest distorted by imperfect focusing. After experimenting with a multitude of Maltese crosses, I found the quickest response from those the components of which were in thickness under one tenth of the total height.

In accord with the observations just described, the test card shown in figure 5 has been constructed. The elements are Maltese crosses, a column of N's, Z's, test type, and a strip of broken rings.

The crosses are composed of twelve lines parallel to radii at 30 degree intervals. A very slight error in axis gives the design a decidedly moth eaten appearance. It is the most delicate and exact astigmatic test I have used. It is also an acceptable illiterate figure. The heavy cross at the top is not so much for use in the examination as to make the nature of the design unmistakable to the patient. The test is conducted with the smallest cross visible. The crosses are purposely somewhat set apart from the rest of the card. Patients speak of the advantage of having a single detached figure to watch, and find it less confusing.

The preliminary report discusses the test conducted with crosses rotated to correspond to the approximate astigmatic axis. This has the advantage of setting two V's astride the diameters of greatest and least curvature. Balancing the sides of these V's furnishes a test of great delicacy. In practice, this advantage, however, is offset by the increased difficulty of recognizing small

amounts of tilting and squeezing when the design stands out of plumb. Except in rare instances, therefore, it does not pay for the time consumed in twisting the crosses around, and I find myself using it very little.

ever, the NZ strip is more trustworthy than any random letters picked from the card, for instance, V or Z alone. V was recommended by Donders. A few examiners of experience report that they have been aware that for some



Fig. 5. Test card.

NZ strip: There are, nevertheless, rare individuals whom the crosses do not suit. In the main they seem to be persons devoid of a sense of proportion. They are those who say, "I never did have an eye". Most of them are not qualified for any subjective methods of examination but occasionally they do well on letters. For such, the NZ strip has been a fairly delicate test. Z is N on its side, so the verticals and horizontals in this column balance each other exactly, as do the diagonals. This column is not so delicate a test as the crosses, but will be seen in the illustrations to be more so than the Snellen card (fig. 6). The optimal proportion of thickness to length seems about one to seven rather than the one to ten of the crosses or the one to five of Snellen. While I am not sure designs having the sharpest angles need the thinnest lines, such may be the explanation.

In using this column, it must be kept in mind that N will sometimes be most distinctly recognizable with a glass that blurs the Z. They are identified by opposite diagonals, one of which may be emphasized by the same glass that obscures the other. In the main, how-

ever, the NZ strip is more trustworthy than any random letters picked from the card, for instance, V or Z alone.

The NZ strip has one advantage lacking in the isolated crosses. The "little tails" to the letters, described by patients with uncorrected astigmatism, are emphasized by being repeated throughout the column. These are a

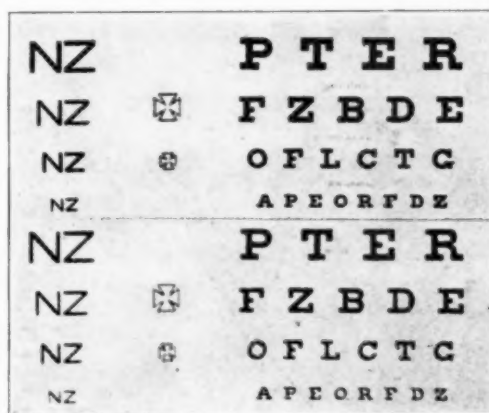


Fig. 6. Above, actual appearance of NZ strip, crosses and Snellen type; below same figure with -0.62 D. cy. neutralized by $+0.62$ D. cy., which is turned 3 degrees off axis. Type is little changed; the small row is a trifle faint; Z is blurred at angles; NZ strip, all angles blurred; lines uneven; crosses, moth eaten; ink run to corners.

manifestation of monocular diplopia. The duplication is most complete when using white letters on a black ground, and most evident when repeated throughout a row of test letters of uniform size.

Confusion card: To take advantage of this phenomenon and any other facilities that may be gained from the regular test cards, there is included a test card of the regular one to five proportion, corresponding in size to the ordinary Snellen letters. It will be seen that every row is provided with some acute angled letters. Furthermore, M and W have been restored because they have the sharpest angles of the alphabet. For the remainder, confusion letters are used. The card is thus also adapted to that method of examination which determines the accuracy of correcting lenses by the increasing number of previously unrecognized characters that they render visible.

There is, in addition, a column of broken circles for precision in determining the acuteness of vision. My patients insist on trying to name these characters, so only those are used that resemble letters. These are O, C and U. Every row is numbered with a numeral the size of the 20/50 type. With the use of red characters on a black ground, the numerals and broken circles furnish an admirable malingering test.

Summary: This study has had a fresh interest because it does not approach the problem from the usual angle. It is not an attempt to use for refraction a figure, the fitness of which is purely theoretical. On the contrary, it starts with a design, the Maltese cross, which at the trial case quite unexpectedly showed greater sensitiveness to errors of refraction than other figures and letters. As has been shown in the illustrations, the twelve acute angles are largely responsible for this property. It is this unrealized importance of the acute angles in test type that makes the Maltese cross a more delicate means of examination than the other figures that were tried.

Circles and octagons, for instance, though theoretically fulfilling all the conditions, turned out to be less useful even than the ordinary test card. From our present information we might assume that this was due to the presence of a few acute angles in the test letters and none in the substitute figures. It seems likely that the lack of acute angles in gratings and broken rings has interfered with their usefulness.

The symmetry of these crosses is partly due to the regular interval of 30 degrees between the members. The different portions are then incomplete equilateral triangles. This fact has suggested some variations in the design none of which so far have been as useful as the original.

One caution is necessary in the use of these figures. Their sensitiveness to slight rotations of a low cylinder naturally leads an examiner at first to anticipate more astigmatism than is actually present. This bothers for only two or three examinations. Likewise, the crosses have an annoying way of uncovering an astigmatism below an eighth of a diopter. Since this is too small to be correctable, the time is wasted. On the other hand, such a small error is unusual, so this is not a serious objection. It is more than counterbalanced by the added accuracy with which moderate astigmatism is recognized both in amount and in axis. The higher degrees present no problem. Most of them can be satisfactorily handled by any one of a dozen methods. It is the patient with a cylindric error under a diopter who wanders from one examiner to another. In fact, the general belief is that the low errors cause the most suffering. It is for these patients, constituting the bulk of our practice, that I have found this card of most value. In ordinary use these figures, and to a less degree the NZ strip and the angular test letters, give not only more accurate but quicker results. They are less fatiguing and save time for both the patient and the examiner.

704 Congress street

NOTE: The chart illustrated in figure 5 may be purchased from E. B. Meyrowitz, Inc.

EXPERIMENTAL BASIS OF SKIASCOPIC PHENOMENA

DR. A. ROTH*

CHARLOTTENBURG, GERMANY

Translation (partly summarized) by

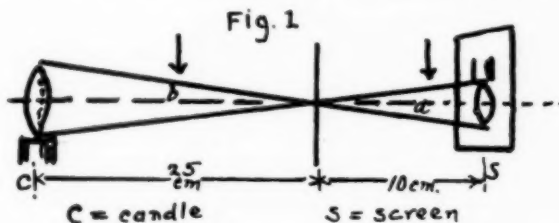
HARVEY D. LAMB, M.D.

SAINT LOUIS

By very simple means, the author suggests a series of experiments which may be conducted by any physician in his own office, to illustrate the principles involved in the skiascopic method of measuring the patient's refraction.

The author begins with the simple experiment of placing a thin metal plate with a small central opening between the lens and a white screen upon which an indistinct image is produced. (Fig. 2.)

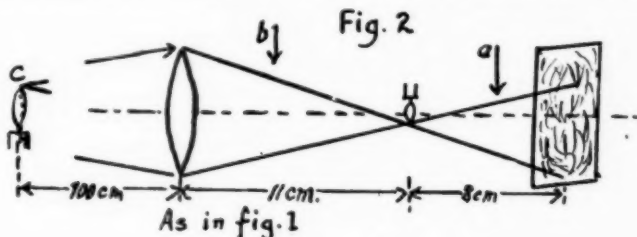
If one interposes the dark screen at



one's eye, whereby the retina would take the place of the white paper screen. Upon the latter an inverted image of the candle-flame is projected. Now, if at *a* in figure 1 a dark piece of paper is interposed from above, the image of the wick is obliterated, whereas if the piece of paper is inserted from above at *b*, the tip of the flame is blotted out. When the observer's retina takes the place of the white screen, then the dark screen inserted between the eye and the perforated metal plate produces shadows on the retina moving opposite to the direction in which the screen is moved, because in the eye there is another reversal of images.

a, then the shadow upon the white screen moves down as the dark screen moves down, whereas the dark screen inserted at *b* causes a shadow on the white screen moving opposite to the direction in which the dark screen is inserted.

There is next interposed (fig. 3) a metal plate with a tiny central opening between the lens and the inverted image. If the opening in the plate is located above the horizontal plane through the center of the lens, then there will occur a small lighted area on the lower side of the screen, and vice versa. If the dark screen is inserted between *c'* and the white screen from

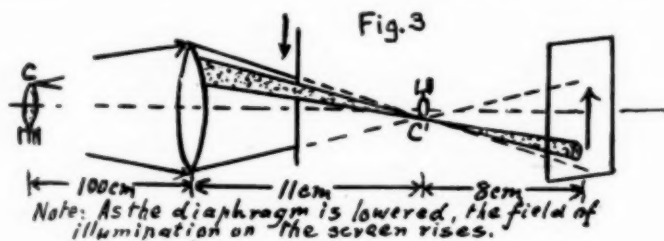


In the next experiment a biconvex lens is introduced and the candle placed one meter from it. The inverted image

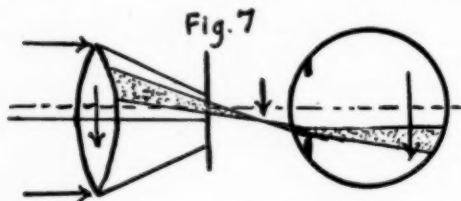
above downward, then the shadow on the white screen moves from above downward. When the metal disc with

* Zeitschrift für ophthalmologische Optik, 1927, v. 15, p. 46.

the opening is placed so that its opening is at c' , then movement of this metal disc up and down either produces upon the white screen a complete obliteration of all light or a lighting up without manifest direction of motion (a neutralization of shadows). In figure 3, if the lens is moved upward then the lighted field on the white screen moves up, whereas the dark screen inserted between the lens and c' produces a shadow on the white screen moving opposite to the direction in which the dark screen is inserted.



Now if one looks through a lens of about plus 5.00 D. sph. strength at a distant object, as the edge of a roof, then when the lens is held close to the eye the image of the roof moves in an opposite direction to that in which the lens moves, but when the lens is held far from the eye the image of the roof moves in the same direction as the lens. An intermediate position of the lens is easily found where there is no motion or a "neutralization of shadows"—the focal distance of the lens. With the lens in this latter position, the metal disc with the central opening is interposed 2 cm. in front of the eye; then



the image of the roof moves opposite to the direction of the lens. This is a practical demonstration of skiascopic phakometry. The myopic eye of the patient is represented by the biconvex lens and the light field on the retina of the patient is represented by the

light source, i.e., the distant roof. The aperture of the lens serves in the experiment for the pupil of the patient.

In figure 7, the lens is placed at such a distance from the eye that the shadows, without the perforated metal disc, move with the lens; but with the metal disc inserted the shadows move opposite to the direction in which the lens moves.

One source of error lies in the fact that the convergent rays are not united into a single plane. The lens focus is actually a focal streak.

Suppose the observer's eye to be brought as close as possible behind a lens of plus 15.00 D. sph. situated one meter from a strong but tiny source of light. The point of light then appears as a small round disc, continually varying in size: its margin is notched. The disc is really an image of one's pupil upon the retina. If the lens is carried away from the eye, the disc of light increases in size until it fills the aperture of the lens. Carrying it still further away causes it to become smaller, the iris shadows gradually closing in until at 0.5 meter only a fine point of light remains. The point of light is really an interrupter of the iris shadow. All differentiation that we see occurs by reason of the shadow thrown by the iris. The skiascopic shadow which we see moving in the patient's eye is really the iris shadow.

To demonstrate that the skiascopic shadow is identical with the iris shadow, the author takes the plus 15.00 D. sph. and notes that when it is held close to the eye the image of the light point moves opposite to the direction in which the lens is moved, whereas when the lens is held further off the image of the light moves with the lens. There would be no shadow on the retina if

the light did not fall upon the iris at the side of the pupil.

As to the skiascopic movement of the shadow in astigmatism: If one places a plus 5.00 D. cylindrical lens axis 45 degrees before his eye and observes in the dark room a circular source of light, then an elliptically shaped disc of light is seen with its long axis at 135 degrees. The elliptical form is the result of the light rays in the direction of the ametropic meridian coming to a focus; the circular form is unchanged where the border of the circle runs parallel to this meridian. An entirely similar elliptical light field must be projected upon the retina in skiascopy of a correspondingly astigmatic eye where a circular source of light is employed.

Such an oblique astigmatism acts differently upon the retinal image where the object has a rectilinear border. With a vertical stenopaic slit before the light source, the obliquely astigmatic eye sees an image of a vertical streak with indistinct outline. The image will not vary from its vertical position so long as the cylindrical lens remains quite close to the eye. Houses appear vertical and the full moon elliptical.

Suppose one looks through a cylindrical lens, for example plus 5.00 D. cylinder, held at 40 to 50 cm. from the eye, at a distant vertical object such as a factory chimney. If the axis of the cylinder is vertical, the chimney will appear unchanged; but if the cylindrical lens is turned, the smoke stack will also turn but with double speed. This is Koller's cylinder experiment and is analogous to the vertical appearance of the image of a table-top seen in a mirror held at 45 degrees to its surface. If the axis of the plus 5.00 D. cylindrical lens held 40 to 50 cm. from the eye is vertical, then the right half of the chimney is displaced to the left in the image and the left half of the chimney to the right in the image. If the axis of the cylindrical lens intersects the chimney at 45 degrees, then what lies to the right of the cylinder axis is displaced to the left and vice versa, 90 degrees altogether because the new angular distance from the cylinder axis must be as great as the old. The mirror upon

the table-top, like the axis of the cylinder, always lies midway between the object and its image. If the angle between the table-top and the mirror is 45 degrees then that between the plane of the object and the plane of the image must be 90 degrees.

When skiascopy is done, we view the patient's fundus through the refractive media as through a loupe; if the eye is astigmatic we must look as through spherocylinders, otherwise as through spherical lenses. We obtain the requisite change of the shadow and thus the skiascopic diagnosis either through the use of lenses of different strengths at a fixed examination distance or through change in the examination distance or through both. In the following there is used only change in the examination distance. The distance from the observing eye to the object remains constant but there is a diminution of the distance between the eye and the image, brought about by a convex lens between the object and the eye being made to approach the observing eye.

These relations are demonstrated in the clearest manner by observing at a distance of one-half meter an object upon which one has put a convex lens, for example plus 10.00 D. sph. If the lens is brought away from the object then its image appears magnified; this magnification increases from one to infinity and then diminishes again.

From a piece of black paper 4 cm. square a triangular opening is cut in its lower half with its point upward. (Fig. 9.) Now a plus 12.00 or 6 plus



Fig. 9. Actual size 4x4 cm.

6 D. cylindrical lens with its axis horizontal is placed upon the paper and then raised from it. Looking down through the lens the acute angle is seen to become more and more acute as the cylinder is elevated until its sides stand

parallel to each other. When the lens is moved to the upper and lower parts of the figure, the space between both parallels closes and opens from right and left like a double gate. When the cylinder is turned so that its axis changes from the horizontal, then one side of the opening remains stationary whereas the other moves that much faster. If the axis of the cylinder is placed perpendicular to one of the sides of the notch, then the corresponding side remains stationary, whereas the other side effects the closing of the notch when the cylinder is moved to the upper and lower parts of the figure. When the lens is raised farther from the notched paper, the sides of the notch begin to converge to below until the point of the angle is seen lying below.

image of the point b is at infinity. This occurs when the triangle and the observer's eye are at the conjugate foci of the lens. By further action of the cylindrical lens at right angles to its axis through elevating it more, the image of b changes from a virtual to a real one lying between the lens and the eye. Thus b approaches from infinity at up and to the left until its image comes to make a horizontal line with a (figure 13).

After adding a plus 20.00 D. spherical lens to the plus 12.00 D. cylindrical lens, the previous experiment is repeated and figures 12 and 13 are obtained with magnified images and with much less elevation of the lens from the triangular figure. Further elevation from figure 13 brings the image to a position in which the hypotenuse of the



Fig. 10



Fig. 12



Fig. 13



Fig. 15

A small right angled triangle with vertical hypotenuse (figure 10) and the other sides equal is drawn and placed on a table. With the eye at 50 cm. above this figure, a plus 12.00 D. cylindrical lens with axis at 45 degrees is placed over the triangle, so that the side ac passes through the middle of the lens and parallel with its axis, then the image of the triangle is but little altered from its object. Now the lens is slowly elevated, whereupon the image of the triangle extends down and to the right until two parallel lines occur (figure 12). Further elevation of the cylinder finally causes the image of the hypotenuse to be horizontal or 90 degrees from its original position (figure 13). Since the cylindrical lens acts only in a direction perpendicular to its axis, the line ac does not change its aspect but the image of the line cb elongated down and to the right and the image of the point b cannot be moved away from the image of the line ac without elongating the line ab . When the images of the two lines cb and ab are parallel the

triangle has been turned around 180 degrees, the image of c coming to lie on the opposite side to what it does in the triangular figure on the paper.

The last experiment is the placing of a plus 12.00 D. cylindrical lens at axis 85 degrees upon the edge of a rectangular piece of dark paper laid upon a table, as at 1 in figure 16. Then with the eye at 50 cm. above the table and the cylindric lens slowly elevated, the image of the edge of the rectangle turns around through positions 2, 3, 4, and 5 of figure 16 or through an angle of 170 degrees.

Application of the shadow test: The image of the hypotenuse in figure 10 represents the vertical shadow limits of the light field on the retina in the skiascoped eye. The observer looks at this shadow limit through the refractive media of the obliquely astigmatic patient's eye as through a spherocylindric lens combination with an oblique cylinder axis. The phases of change of the image from figure 10 through figure 16 are all imitations of

the practical shadow test, particularly when one moves the dark edge of the rectangle to right and left against the stationary lens. These experiments show that turning of the shadow is not a skiascopic but a cylindrosopic phe-

nomenon, for in the critical phase of the shadow test the shadow change is obscured by the shadow turning, and it is only by disregarding this turning of the shadow that the shadow test can be carried out.

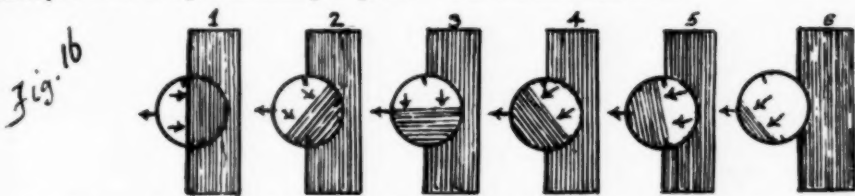


Fig. 16. A somewhat obliquely placed cylindrical lens covers one marginal part of a vertically placed rectangle. The crescentic figure seen through the cylindrical lens turns with variation in distance between the lens and the rectangle.

NOTES, CASES, INSTRUMENTS

A "CONJUNCTIVAL BRIDGE" IN CATARACT EXTRACTION*

A. E. EWING, M.D., F.A.C.S.
SAINT LOUIS

There may be nothing new in this procedure, but I have submitted it to a number of colleagues and as none of them had seen it a record of it is not out of place. However, a similar, perhaps the same technique is credited to Cluckie in the American Encyclopedia of Ophthalmology, vol. 3, p. 1711. The points of advantage in the operation are protection against loss of vitreous and substitution of the "bridge" for the conjunctival suture.

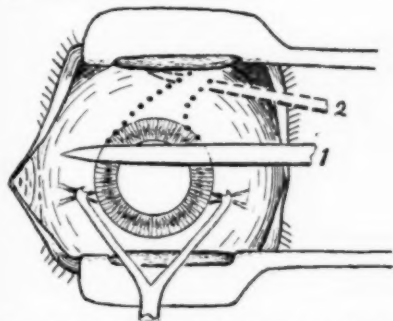


FIG. 1. (Ewing). The knife at 1 indicates the beginning of the corneal incision. At 2 the position of the knife at the termination of the conjunctival incision is indicated. The outline of the incision in the cornea and the conjunctiva is shown by the dotted lines.

* Read before the Saint Louis Ophthalmic Society, November, 1927.

The corneal incision is made with a narrow Graefe knife. As the knife nears the limbus the edge is tipped backward so as to engage the conjunctiva over a width of six or seven mm. The incision is then continued superficially in the conjunctiva upward and outward (fig. 1) and the knife is withdrawn leaving a connecting band of conjunctiva, the "conjunctival bridge", three or four mm. wide. The iridectomy and the capsulotomy are performed in the

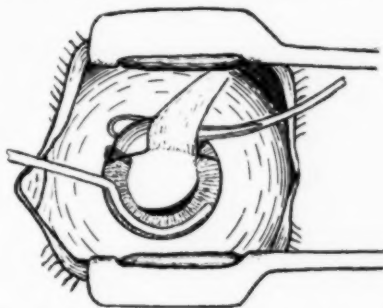


Fig. 2. (Ewing). In this diagram the positions of the loop and the hook are represented as the lens is being expressed by them.

usual manner. The delivery of the lens is accomplished by passing the loop, spatula, or spoon back of the "bridge" (fig. 2), making pressure downward on the posterior lip of the corneoscleral wound and at the same time making pressure backward at the lower corneal margin with a lens spoon or a hook. When the lens and the cortex

have been delivered, the iris and shreds of capsule should be stroked back into the anterior chamber from the nasal and temporal lips of the wound and from beneath the "bridge" with a spatula, the stroking being in the plane of the iris and toward the pupillary center. This is followed by the usual toilet and cataract dressings.

As an aid in maintaining steady fixation the double fixation forceps repre-

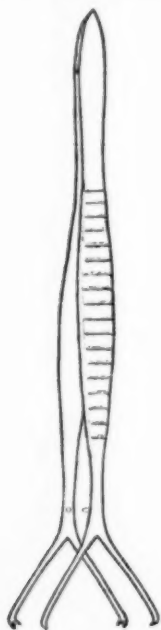


Fig. 3. (Ewing). A new double fixation forceps for fixing the globe in the "bridge" operation.

sented in fig. 3 has given excellent service. It is a possible improvement on the forceps suggested in 1911, as a deeper yet harmless bite in the sclera may be obtained with it. The operation is easy to execute and the "bridge" is a great protection to the sclerocorneal wound.

520 Metropolitan building

FRAGMENT OF STEEL EMBEDDED IN RETINA FOR FOUR YEARS

L. WEBSTER FOX, M.D., F.A.C.S.
PHILADELPHIA

The behavior of foreign bodies within the eye has occasioned a great deal of

discussion, and according to one's experience with them will be the opinions expressed as to the method of handling such cases in the absence of any untoward reaction. The information concerning them is not very well tabulated and classified for purposes of accurate analysis, thus we are not able to reach an understanding of just what happens in the case quiescent at the start. The general understanding seems to be that such cases progress toward some serious disturbance. The history of this case is therefore recorded in order that some searcher after truth in the future may include it among those that have not so progressed.

Four years prior to our observation a fragment of steel had entered the eye and had become embedded in the retina. This eye was entirely quiet when the patient consulted us for failing sight in the fellow eye, which proved to be due to disease of the optic nerve. In the eye containing the foreign body the field was normal except for a segment corresponding to the site occupied by the foreign body. The x-ray picture was negative. Evidently the foreign body was too small to register a shadow in that situation. But with the slit-lamp the track of the foreign body could be readily traced, first there was a faint circular macula of the cornea near the limbus on the temporal side. Next, a trifle further in toward the center, was a hole in the iris. Still further in a brownish deposit could be made out in the anterior capsule of the lens. In the posterior capsule was a linear diffuse semicrystalline formation. A linear tract was visible in the vitreous. With the ophthalmoscope, above and to one side of the disc could be seen a bright round area of exposed sclera surrounded by a zone of pigment. In the middle of this area was a rectangular greenish body set with its long axis vertical and somewhat oblique. With the high magnification possible with the ophthalmoscope the area appeared to be about $\frac{3}{4}$ of an inch in diameter and the foreign body about $\frac{1}{8}$ by $\frac{3}{8}$ inch. The slit-lamp did not demonstrate the foreign body although it did mark out its track. Traumatic cataract did not develop, although there was a limited

opacity of the lens. In this entire period of four years the patient had suffered no ill effects from the presence of the foreign body.

303 South Seventeenth street.

UNUSUAL LACERATION OF EYES: RECOVERY

S. B. FORBES, M.D.
TAMPA, FLORIDA

W. M., colored, aged thirty-five years. Seen by author twenty-four hours after being struck on forehead with bottle. The bottle shattered against his head. Examination of eyes showed in the right eye a complete laceration of the cornea extending from limbus to limbus. There was no incarceration of iris and the anterior chamber was not completely collapsed. The left eye showed a laceration extending well out into the sclera at seven o'clock and to the limbus at two

The left eye presented as hopeless a situation as one could imagine. In view of the double injury, I felt that I had no right to enucleate the eye. Both eyes were thoroughly flushed with warm saline and mercurochrome was freely instilled. Conjunctival flaps were sutured over the cornea of the right eye with no difficulty. In the left the iris was gently replaced in the anterior chamber and the edges of the wound approximated as nearly as possible, with very gentle manipulation. Again conjunctival flaps were sutured over the cornea.

Absolute rest in bed, with an opium compound to prevent any bowel movement, and a liquid diet, were the general measures instituted. Locally, atropin, hot applications, and pressure bandages were used. The blood Wassermann was negative. Nose and throat examination was essentially negative, and there was practically no oral sepsis.

Fortunately the flaps held, and the sutures were removed on the sixth day.



Fig. 1. Unusual lacerations (Forbes). Appearance after six months. The white dots are reflections of the lights used by the photographer.

o'clock. There was loss of vitreous at the lower angle of the wound. The anterior chamber was completely collapsed and there was some incarceration of iris below. As far as I could determine there was no separation of the iris at the root. The laceration was so bevelled that the lower portion of the cornea sagged and the edge of the wound gaped very markedly. No evidence of glass could be found in either eye.

At this time the right eye was practically healed, there being a very superficial stain with fluorescein along the wound. This stain disappeared at the end of the second week. The left eye required longer to heal, about four weeks.

Six months have elapsed since the injury, and examination now shows both eyes white and quiet with no tenderness whatsoever. The vision is 20/50 and 20/70. Tension twenty-eight

and twenty-four mm. (McLean). Fundus examination in right eye negative, in left very difficult to obtain because of pigment deposits on the anterior surface of the lens, as shown by slit lamp. There are some anterior synechiae along the lower portion of the wound in the left eye.

The accompanying photograph shows the present condition of the eyes. This man is now able to carry on his usual vocation. I report this case to impress on the profession that occasionally eyes which seem to be hopelessly lost can be saved.

409 Citizens Bank building

OPHTHALMOPLAGIC MIGRAINE: CONVERGENCE PARALYSIS

F. W. MARLOW, M.D., F.A.C.S.

SYRACUSE, NEW YORK

In the cases of ophthalmoplegic migraine hitherto recorded the muscles involved have usually been one or more of those of third nerve innervation and limited to one eye. No case of convergence paralysis occurs in the literature of the subject as far as ascertained. In a verbal communication from J. B. Lawford I learn that a case of this kind occurred in the out-patient department of the Royal London Ophthalmic Hospital some years ago. The subject is very fully dealt with in Posey and Spiller's "The Eye and Nervous System".

The following case therefore seems to be worthy of record. Dr. C. J. C., instructor in physiology, aged thirty years, was first seen on September 27, 1926, on account of headaches and a sense of strain existing since early summer. He had formerly been the subject of headaches and had worn glasses since the age of twelve years. They were for a moderate amount of myopic astigmatism and had been unchanged for three years. Examination showed the presence of a higher amount of astigmatism, and the necessary correction was made. His general health was good.

He had had all the children's diseases, two attacks of pneumonia, and mumps with pancreatitis while in the army. Two years ago he had an attack of iritis, the etiology of which was not determined, in spite of a thorough overhauling in Boston, while under the care of Dr. Derby.

The headaches have been of a migrainous type, always unilateral, the right side being more frequently attacked than the left. His mother had sick headaches during the earlier part of her life.

On October 10, 1926, he awoke with a headache of increasing intensity, and slight nausea, but went to church and while there the headache became worse. After getting home he began to see things near to him double. He found by measurement that every thing within four feet was double.

Seen the next day (October 11th) his muscle balance for distance was the same as when seen in September, exophoria 1.5°, and a low left hyperphoria, but when the test object was brought to 65 cm. from his eyes he saw it double. Excursions of the eyes normal in every direction. No evidence of oculomotor paralysis. Pupils normal in size and reaction. There was a slight loss of accommodation in the right eye as compared with the left, the near point of the right eye being sixteen cm., and that of the left twelve cm. There were no ophthalmoscopic changes. The outstanding departure from the normal then was a convergence paralysis. On the following day, October 12th, the near point of convergence was 62 cm., the near point of accommodation of the right eye being 12 cm., that of the left 11 cm. On October 13th the convergence near point was 37 cm., October 14th 25 cm., October 15th 11 to 12 cm., October 16th 9 to 10 cm. (p. p. 11 to 12 cm.), and October 23rd 9 to 10 cm.

The patient was seen again on account of a mild conjunctivitis on December 16, 1927. He had had no recurrence of symptoms, and his near point of convergence was still 9 to 10 cm.

731 University building.

THE ABBÉ DESMONCEAUX AND REMOVAL OF THE LENS FOR MYOPIA

JAMES MOORES BALL, M.D.
SAINT LOUIS

Tonight* I have pleasure in showing you the two volumes of the *Traité des Maladies des Yeux et des Oreilles*, written by the Abbé Desmonceaux de Villaneuve (1734 to 1806). These volumes are dated "Paris, MDCCCVI." However, the dedication which is addressed to Madame Adélaïde de France, bears the date 1786, so that it seems the work must have been reprinted.

My introduction will be brief; and the major part of it is translated from Julius Hirschberg's *Geschichte der Augenheilkunde* in the new *Graefes-Saemisch Handbuch der gesamten Augenheilkunde*, Leipzig, 1911, (volume 14, part 3, pages 107-111.)

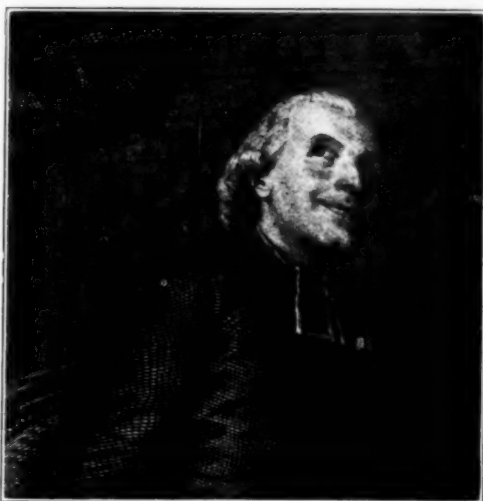
During his spare hours the Abbé composed this treatise on the eye and the ear, Paris, 1786, two volumes, 480 and 497 pages respectively. The work "is so weak and wretched" (ist so schwach und elend), says Hirschberg, that notice of it would not be taken, except that for this priest the claim has been made (erroneously so), that he was the father of the operation for removal of the lens in cases of myopia.

Hirschberg did not have a high opinion of the priest's work; and quotes what Panas had to say, in these words: "der Abbé mehr Menschenfreund als Augenarzt gewesen" (the Abbé was more a philanthropist than an ophthalmologist).

Desmonceaux's book was published in 1786. Twenty-three years before this date, Albrecht von Haller (1708-1777), of Berne, the infant prodigy who wrote "Latin verses and a Chaldee grammar at ten" (Garrison) had advocated removal of the lens in myopia. Others had preceded Haller. Priority, however, belongs to Joseph Higgs, a Birmingham surgeon who, in 1745, in a small book published in London, advanced the idea of relieving myopia by depressing the lens.

Hirschberg states that his friend Nettleship, of London, traced Higgs' book, of which he found a copy in the library of the Royal Society of Medicine in London, and extracted therefrom the following:

"Some years ago, I proposed to Dr. Desaguliers a Method for relieving near-sighted Persons, by depressing the Crystalline Humour, as in Couching; inasmuch as, when that Medium is removed, one of a less density will succeed, which will supply the place of Glasses. But the Experiment I have never as yet tried."



The Abbé Desmonceaux

Thus, it would appear, all of the men who advocated depression or extraction of the lens for the relief of myopia were theorists.

What the Abbé Desmonceaux had to say concerning an operation for the relief of myopia is to be found in the second volume of his work (beginning on page 139). For the following translation I am indebted to Dr. Noxon Toomey, of Saint Louis:

"The most ordinary causes constituting myopia may be considered under two different aspects, which are the excessive volume of the vitreous body, or that of the crystalline lens. In both cases, the simplest remedies are always the best; they consist in the precaution of bathing every morning, the forehead, the temples, and the eyes with oph-

* Read before the Ophthalmic Section of the Saint Louis Medical Society, November 3, 1927.

thalmic water, and of awaiting a state of well being with the number of years, because imperceptibly the excessive volume of the ocular humors diminishes, the cornea becomes less protuberant; whence it occurs that the light bundles are less susceptible of refraction, and the point of reunion more easily reproduced on the organs of vision. Myopes of two or three inches, are very unfortunate subjects, since they only see confusedly what is at their feet, they are consequently little adapted to work; that is why, when they are still young, my advice is to extract the crystalline; which will diminish the extension of the cornea, and will render the image of objects more perceptible; this operation, as I announced in a little work which I gave in 1776, is less to be feared than that of cataract, because the lens which is not changed of which the capsule is opened, escapes more easily upon opening the cornea. This help, for myopes of the first class, was neither known, nor practicable before the operation by extraction, and cannot fail to be of great utility for those who need to work.

"I have not given an account of the different manners of proceeding to section of the transparent cornea, in extraction of the opaque crystalline lens, nor of the different instruments which one employs to do this operation, because among the number of operating oculists, there are some who act in one manner and others in another; but I ought to say that the operation which is practised most successfully, and which is less likely to engage the fibers of the iris, is that in which the incision is di-

rected toward the middle of the limbus of the transparent cornea which corresponds to the small angle; which is done with the help of two instruments, one for opening the cornea, the other for prolonging the section and making it sufficiently extensive for the crystalline lens and its capsule to be able to escape easily.

"Myopes and semimyopes only need to take precautions to maintain and conserve their vision, to prevent relaxation of the nervous and muscular parts which is the sequel; for to the extent that the humors of the eye diminish in volume, the solids lack tone, and the fluids circulation; I may even say that I have often seen patients of this kind, run more risks than the others because the more relaxation there is in the solids, the less action there is in the fluids; it is also to prevent this inconvenience, that I advise bathing every morning, the forehead, the temples and the eyes, with ophthalmic water or with that of prepared houseleek ("jou-barbe"), to make use, from time to time, of the vapor of eau de Cologne held under the nose and under the eyes; not to seek to multiply optical aids in continually changing concave lenses, nor to use them to look at the fire or any other excessively luminous body; for the rest, to keep them clean and neat, in order not to produce a new obstacle, or cause a greater clouding of vision. This last observation is too sensible not to be made use of in all circumstances where need demands it, as I shall have occasion to speak of it in the article concerning spectacles."

4500 Olive street.

SOCIETY PROCEEDINGS

COLORADO OPHTHALMOLOGICAL SOCIETY

October 15, 1927.

DR. E. R. NEEPER presiding.

Unusual corneal infiltrate

DR. J. A. PATTERSON brought C.P.H., aged 69 years, male, colored, to show a peculiar brown mottling of an infiltrated area of the cornea of the left eye. The mottling was in the substantia propria.

The tension in this eye was 61 mm. Hg. The eye became red suddenly in October, 1927, without pain and without secretion. The cornea was anesthetic and took the fluorescein stain very faintly in the lower central half. The Wassermann reaction was negative; past history negative, and physical examination failed to reveal any pathology.

Discussion. DR. MARBOURG suggested the possibility of a neuro-paralytic keratitis with a foreign body as the cause of an ulcer which had now healed.

DR. PATTERSON AND DR. J. M. SHIELDS thought that an iridectomy should be done for the rise in tension.

Congenital subretinal fibrous mass, choroiditis, and retinitis proliferans

DR. E. M. MARBOURG presented Mr. M., aged 37 years, who had known of poor vision in his left eye since twelve years of age. The right was normal in all respects. In the left eye there was a diffuse choroiditis, and extending from just below the macula forward as far as could be seen was a grayish-white mass, which was narrower in its central portion and spread out into a fan-like terminus anteriorly. The retina was believed to cover this mass. The vision was 1/200.

Discussion. DR. WILLIAM H. CRISP said that the mass had a fibrous appearance, was much more irregular than the usual retinitis proliferans, and was very probably a congenital anomaly. Early intrauterine disease at the time of closing of the optic cup could account for the chorioretinal

changes. He saw the mass clearly with a plus eight sphere and pointed out in addition that above the disc the retina was detached.

DRS. E. R. NEEPER, JAMES M. PATTEE AND W. M. BANE thought that the condition could be more properly called retinitis proliferans.

Small pupils

DR. E. R. NEEPER showed Mr. D., aged 82 years, the smallness of whose pupils had been commented on all his life. When first examined three months ago his pupils were 1 mm. in diameter when facing an east light at a distance of fifteen feet from the window. They were equal in size and the consensual and direct reactions to light were prompt. Under homatropin the pupils dilated to 2.5 mm. His vision had been failing recently, a fact accounted for by bilateral, incipient nuclear cataracts.

Intraocular tumor?

DR. E. R. NEEPER presented Mrs. W., aged 36 years. She was examined in January, 1924. At this time vision O. D. was perception of light and motion in the temporal field; vision O. S. 20/50+. There was a large organized inflammatory exudate in the vitreous, just posterior to the lens, which occluded any view of the fundus. The poor vision in the right eye was ascribed to an attack of iridocyclitis which had occurred six and a half years previously. In July, 1926, a diagnosis of iritis in the right eye was made by another oculist and a scleral prominence was noted about 3 mm. downward and outward from the limbus, which was sensitive to touch. According to the patient's observation, the appearance and sensitiveness of this prominence had remained unchanged. A central scotoma was discovered in the left eye two months ago. At the present examination a bulging outward of the sclera was noticed between seven and eight o'clock over an area one cm. in diameter. This area was not painful though slightly sensitive to touch, and

there was no inflammatory reaction. The vision was nil.

DONALD H. O'ROURKE,
Secretary.

NEW ENGLAND OPHTHALMOLOGICAL SOCIETY

November 15, 1927.

DR. E. K. ELLIS, president.

Exophthalmos and loss of vision

DR. GEORGE S. DERBY presented the case of a woman of 45 years who two years ago noticed that the vision in the right eye was poorer than that in the left eye. Since then it had steadily failed. She was seen first in August of this year, at which time the vision in the right eye equalled counting fingers at six inches. Only a small part of the nasal field remained. The eye diverged 10 to 15 degrees and showed 4 or 5 mm. of exophthalmos. The palpebral fissures were of equal width. There was a well developed primary atrophy of the nerve. The left eye was normal. Patient had her nose operated on for a deviated septum one and one half years ago. The general physical examination and neurologic examination were negative. Wassermann was negative; x-ray of head negative. There was but slight limitation of movement of the eye.

Diagnosis was probably new growth of the optic nerve and the question came up as to what procedure it was best to adopt.

Discussion. DR. F. H. VERHOEFF said the very moderate exophthalmos and lack of disturbance of ocular motility suggested a meningioma of the optic nerve sheath. He would be in no hurry to explore.

DR. H. B. C. RIEMER would advise an exploration in case of malignancy.

DR. W. B. LANCASTER said since no one could be positive what the nature of the trouble was without exploration, why not go in and find out. The eye was blind so there was nothing to lose in the way of vision. Enucleate and make sure that there was no malignancy. This was better than a Krönlein.

The cosmetic result would not be bad unless a condition were found which required complete exenteration of the orbit.

DR. ALLEN GREENWOOD thought he might be overconservative, but as long as the growth showed no signs of malignancy he would leave it alone. He had a similar case which was referred to Dr. Cushing. It turned out to be a meningioma.

DR. S. J. BEACH said the use of x-ray was uncertain but apparently harmless. A similar patient of his received massive x-ray in Philadelphia without benefit.

DR. GEORGE S. DERBY also presented the following case of a colored woman, 38 years of age:

For three months there had been occasional attacks of severe pain in the right temple. Ten days ago she had a very severe attack of pain followed by blindness, complete external ophthalmoplegia and about four mm. of exophthalmos. Since then the condition had not changed. The patient had almost no movement of the eyeball; fundus was negative. Since that time there had been occasional attacks of pain but no change in the paralysis or the appearance of the eye. The left eye was normal. The neurologic examination was negative except of the eyes. The x-ray showed thickening of the ethmoid and antrum. The antrum was washed out. The blood Wassermann reaction was strongly positive. The lumbar puncture showed spinal fluid of normal pressure, Wassermann reaction negative. As to the diagnosis he suspected that there might be an aneurism in the region of the cavernous sinus. He had also thought of a gumma. X-ray of the skull was negative. The right optic foramen measured four mm. and the left five mm.

Discussion. DR. J. J. SKIRBALL had had a similar case in a woman of 45 years, who presented on examination a paralysis of the right sixth nerve. Two days later the third and fourth became involved. There was a complete ptosis of the upper lid and the pupil did not react to light or accommodation. Her fundus was normal. All serologic

examinations were negative and her fields were normal.

DR. HARVEY CUSHING had seen this case and admitted her to his service for study. She remained about three weeks and gradually began to clear up so that at the present time there was involvement of the sixth nerve only.

There was no pain at any time. Dr. Cushing made the diagnosis of an aneurism of the right internal carotid. There was probably some hemorrhage which was now in course of absorption and accounted for the clearing up of all symptoms. He felt that there would probably be recurrence.

Spontaneous rupture of Elliot trephine bleb

DR. ROBERT C. CHENEY presented the case of a man, 41 years old, who had been seen in 1919 by Dr. Cheney, Sr. There was glaucoma of the left eye with a tension of 32 mm. The eye was white and quiet. Iridectomy was done, after which the tension remained normal a while. In 1920 he was seen by Dr. Derby and a trephining was done at the edge of the coloboma. Tension stayed down. No further complications occurred until 1921, when the patient came with flat chamber and ruptured bleb. There had been no known trauma. In two days the chamber was reestablished. During the next six weeks the condition varied. There was visible a tiny hole where the bleb had ruptured and now stained with fluorescein. In 1922, the patient struck the eye and ruptured it again. A hole in the bleb was seen. Anterior chamber became reestablished. In 1926, the tension was low and the bleb large. The patient came back in four months complaining of pain. In 1927, seven years after the trephine was done, there was no bleb and the trephine hole was plugged with uveal tissue. Dr. Cheney made another trephine opening below. This had drained and was getting along well. The patient developed five or six attacks of acute conjunctivitis in spite of zinc sulphate being used regularly all the time.

Depigmentation of iris, with pigment deposits on posterior surface of cornea

DR. H. B. C. RIEMER presented a patient, fifty years of age, who came in for refraction September 29, 1927. There had been no symptoms. Vision was 20/20-2 with either eye with a small minus correction. There were minute spots of pigment scattered over the entire iris, giving the iris an appearance as in siderosis bulbi. With the naked eye one could see central vertical streaks of pigment in both corneas. On examination with ten-power magnifying glass these vertical streaks were seen to be made of punctate spots of pigment. There was a slight cupping of both optic discs in the temporal half. The right field showed a small Rönne step. The tension was normal. The pigment on the back of the cornea suggested Krukenberg's spindle.

Some features of glaucoma complicating iridocyclitis

DR. FRED TOOKE of Montreal read a paper on this subject (published in February issue of this Journal).

Discussion. DR. WALTER B. LANCASTER remarked that glaucoma certainly was an enigma. Our methods of dealing with it partook too much of trial and error. What else could we do? If we were so fortunate as to find a focus of infection, it should be removed.

In the second place, there was pretty general agreement that atropine was required when there was inflammation of the uveal tract. However, to illustrate that authorities were not universally agreed, he cited two papers published in German periodicals within a few years.

A case of glaucoma complicating iridocyclitis was treated with atropine and the tension was not controlled so that it was decided that an operation must be done. In preparing the patient for operation pilocarpin was used, since a small pupil would facilitate the operation. The result of the pilocarpin was such a prompt reduction in tension that the operation was not needed.

He mentioned a case reported by Larsen. The patient had a double

iritis with increased tension. She was treated with pilocarpin and, as the progress was unsatisfactory, Larsen operated on one eye. She made up her mind not to have the second eye operated on, and was sent home with a prescription for iron and arsenic, but no eye drops. Six months later the vision in the operated eye was 6/40, while in the unoperated and practically untreated eye the vision was 6/8. The surgeon attributed this excellent result in the second eye to the iron and arsenic.

DR. ALLEN GREENWOOD said he was going to agree with Dr. Tooke that hypertension was always secondary to some other eye condition. Twenty years ago he had a case of chronic uveitis in which the tension went up. He tried pilocarpin but adhesions formed, so went back to atropin, but was forced to do a double iridectomy which gave a perfect result. Later the teeth were investigated and the cause removed. In the majority of these secondary cases pushing the atropin was indicated. Occasionally, alternating with pilocarpin would give better results and in some cases some type of operation was imperative.

DR. GEORGE DERBY wished to make a plea for the recognition of secondary glaucoma. He thought it would be a very good thing to print on our hospital wall "Beware of secondary glaucoma." It was an extremely important thing to look at all our cases with an eye to possible increase in tension. This secondary tension might come in many different conditions and might lead to blindness almost before it was recognized. The handling of these cases was extremely difficult. We customarily started with a paracentesis, later on did an iridectomy and were finally forced to do a decompression operation, and sometimes to repeat this. We should all probably live ten years longer if cases of secondary glaucoma could be banished forever.

DR. S. J. BEACH said that when it was difficult for him to be certain of the tension in inflamed eyes he had found Dr. Souter's tonometer invaluable.

W. HOLBROOK LOWELL,
Recorder.

COLLEGE OF PHYSICIANS OF PHILADELPHIA

Section on Ophthalmology

November 17, 1927

DR. EDWARD A. SHUMWAY, chairman.

Massive exudate of the retina

DR. W. G. MENGEL reported a case of retinal disease with massive exudation. He reviewed the literature, and found 94 cases reported, including 33 cases classified from the literature by Coats, in 1908.

The present patients, a boy six years of age, with right eye involved, had the characteristic yellowish-white mass beneath vessels. The mass at one time appeared similar to circinate retinitis. Vascular changes showing fusiform and aneurysmal dilatations were noted as the condition progressed, and finally became enlarged and tortuous, approaching the type of angiomatosis. The case was placed in the Coats group 2, cases with vascular changes. The pathological processes associated were suspicious tuberculous chest lesion with a family history of tuberculosis, and an indefinite right antrum disease.

Discussion. DR. WILLIAM ZENTMAYER said that to the classification of retinal disease with massive exudation given by Dr. Mengel might be added still another, suggested by Nettleship, "a class of cases where, in children, gross detachment of the retina occurs in connection with thick plates, sometimes white, sometimes yellow, in or behind it, with an appearance indicating subretinal hemorrhage."

In a study of cases of massive exudation in the retina one is struck with the difficulty of assigning a given case to any one of the separate classes into which the disease had been divided, as usually one finds, in the same fundus, changes belonging to two or more of the classes. Some years ago Dr. Zentmayer had reported under the title of "retinal disease with massive exudation and allied condition" a typical case of Coats' disease and one conforming to the Nettleship type.

Orbital growth

DR. HENRY O. SLOANE exhibited a patient, J. W., aged nineteen years, who had been referred to him by Dr. Bloomfield on November 14, with the following history: About nine years ago his mother noticed that the right eye began to be displaced downward, and this condition progressed. He gave the history of having been struck in the left eye when he was ten years old and attributed his present condition to that injury. The eye was normal until the accident occurred. There was no other history of injury or illness.

Examination showed the patient to be well developed physically. His features were normal in position and appearance with the exception of the right eye. The right orbit was about two mm. below the left. The skin of the upper eyelid was reddish in color. The eyeball, together with its coverings (lids, lashes, etc.) was displaced downward about eighteen mm. below the left eye and protosed about five mm. The rotation of the eyeball was normal in all directions except for some slight limitation upward. The conjunctival vessels were injected; the cornea was clear except for a nebula about one and one-half mm. below the center. The pupil was three and one-half mm. and reacted normally to light and convergence. The anterior chamber was of normal depth and perfectly clear. The iris was normal. Vision was 20/200. Field studies done at that time were practically normal. There was a slight contraction of the field below and a very slight enlargement of the blind spot.

Under homatropin, the media were found to be clear and the disc margins could be seen fairly definitely although there was some blurring present. The color was good. There was distinct blurring of the face of the disc due to edema and a filling of the cup with lymph which also surrounded and covered the central vessels. There was a fullness of the veins and a beginning tortuosity of the larger vessels. The region of the macula and the periphery showed no pathological changes.

Palpation beneath the orbit revealed a fairly soft mass, bulging slightly

forward. It had a fibrous feeling to the touch, but could not be outlined definitely. A mass situated in the orbit was pushing the eyeball downward and forward. According to the patient's statement, x-ray studies made two years ago at Wills Hospital revealed an infraorbital tumor about one inch in length transversely. As to the nature of the growth, one could only speculate at this time. It may have been either a mucocele, angioma, or, as Dr. LeFever has suggested, a cold abscess. Operative procedure has been advised and will be carried out as soon as complete studies are made.

Discussion. DR. WILLIAM ZENTMAYER said that last spring he operated upon a case which resembled the one shown by Dr. Sloane. This was a boy of about the same age as this boy, with a history of protrusion of the eye of ten years' standing, said to have followed a blow. The condition was almost exactly the same except that the downward dislocation was not so great. He was treated with x-ray, radium, and large doses of potassium iodide for a period of one year without appreciable improvement. The pathological examination showed a sarcoma, with a large amount of fibrous tissue. Dr. Zentmayer said he had noted that irrespective of the position of the growth there was often a palpable mass beneath the superior orbital margin. He thought that this might be due to dilatation of the orbital veins and changes in the orbital tissues.

DR. E. A. SHUMWAY agreed that the surface character of the growth to palpation did not constitute a criterion as to its real consistency, as the real tumor might be further back in the orbit, and be covered by edematous tissue. The presence of whip-like cords on the anterior surface in Dr. Sloane's case suggested neurofibroma, but in such cases there was usually involvement of the eyelids. The negative findings to the x-rays would exclude osteoma, and the negative Wassermann, if corroborated, would similarly exclude gumma. The very slow development of the growth was evidence of its benignity, and would rule out round

cell sarcoma or an epithelial growth invading the orbit from a neighboring sinus; and the absence of increased leucocytosis would preclude an inflammatory process. In the majority of cases positive diagnosis could be made only by microscopical examination of the exenterated tissue. It might prove to be a slowly developing sarcoma arising from the periosteum, or other connective tissue elements in the orbit, or a growth arising from the optic nerve sheaths.

Comparative study of the rôle of pigment in the physiology of vision

DR. FRANCIS ADLER spoke of the rôle of pigment in the physiology of vision, pointing out that the various types of pigment present in the mammalian eye showed analogies in structure and function with the various pigments found elsewhere in nature. The functions of light protection, light isolation, photodynamic sensitization, and phototactic movements so frequently met with in pigments in nature were also seen in the fully developed eye. The pigment cell was a necessary component of every photoreceptor.

Lantern demonstration of tumors of the conjunctiva

DR. E. A. SHUMWAY and DR. PERCE DELONG gave a lantern demonstration of microscopic slides illustrating tumors of the conjunctiva, from Dr. Shumway's collection.

An unusual form of symmetrical lenticular opacities in the adult nuclear zones

DR. LUTHER C. PETER had observed this condition in a young man sixteen years of age, during the course of an examination for glasses. In the equator of the adult nuclear zone, there was an irregular line such as we find in a pulse tracing, the tracing forming a complete circle as viewed with the ophthalmoscope. Under high magnification with the 3A objective on the slitlamp, the tracings were seen to consist of an irregular line such as one finds in taking an original pulse tracing. There were no other evidences of lenti-

cular opacities, and the condition was present to the same extent in both eyes.

Inquiry as to the history in the case revealed the fact that the patient suffered from malnutrition during the first few years of his life. There was no history of tuberculosis in the family, and the patient at this time was well nourished. The slitlamp examination definitely showed that the irregular line was immediately outside of the adult nuclear zone. It is probable, therefore, that these opacities developed in the first few years of the patient's life, and should be regarded as the result of malnutrition. The lenses in other respects were entirely normal, as shown by the slitlamp.

The case was placed on record because no similar case had been found in the author's experience or in a fairly complete review of the literature. The condition undoubtedly was nonprogressive.

An instrument for the removal of intraocular foreign bodies

DR. T. B. HOLLOWAY exhibited an instrument designed for the removal of intraocular nonmagnetic foreign bodies. The principle of the instrument was based on a type of bronchoscope utilized in the clinic of Dr. Chevalier Jackson at the University Hospital. For the use of the method described by Dr. Cross at the last meeting of the American Ophthalmological Society, a change in the handle would be necessary.

Discussion. DR. GEORGE H. CROSS said that it was rather difficult to discuss many points of Dr. Holloway's instrument for the removal of nonmagnetic foreign bodies from the vitreous, as it was as yet untried. He had no doubt that Dr. Holloway had discovered how difficult it was to manipulate any instrument under a fluoroscopic screen. In his very limited experience with the removal of nonmagnetic foreign bodies from the vitreous, the simpler and less complicated the instrument and method, the more likelihood there was of success.

Dr. Holloway, in closing, stated that he wished to reaffirm that in suggesting that his new type instrument would

probably produce less disturbance of the vitreous than the one used by Dr. Cross, he was in no sense reflecting upon Dr. Cross's instrument. The suggestions for this instrument had been given to the instrument maker with the intention of using it in the case of a child with a small particle of brass or copper in the eye, but unfortunately the foreign particle could not be satisfactorily seen with the fluoroscope.

Moving pictures of patients with orbital conditions

DR. T. B. HOLLOWAY exhibited a series of moving pictures showing various types of orbital disease. These were exhibited before the Section, not with the intention of demonstrating the cases selected, but simply to show the availability of well selected cases for the moving picture demonstration. Still further, with the ease with which good results could be obtained, it was felt that these would be invaluable for teaching purposes. In most institutions when approaching such studies as orbital diseases or the external ocular muscles, it was frequently difficult to assemble a sufficient number of cases to illustrate the various types of condition. Equipped with a reel of moving pictures, one always had at hand what might be regarded as a "canned clinic".

LEIGHTON F. APPELMAN,
Clerk.

BROOKLYN OPHTHALMOLOGICAL SOCIETY

December 15, 1927.

DR. JAMES H. ANDREWS presiding

Aniridia

DR. CROLL presented five cases of this condition in one family—a mother and her four children. The fifth and youngest child was normal. The symptoms and signs characteristic of this condition are: (1) high degree of amblyopia; (2) photophobia; (3) nystagmoid movement; (4) red reflex when looking to light; (5) no improvement with glasses. The condition is always bilateral, the patients are predisposed to secondary glaucoma, and there is a definite hereditary tendency.

Retinitis proliferans

DR. BRUNO presented a patient who had been struck by an umbrella two years previous to coming to the clinic. He received no treatment at that time. The vision has been poor since. Examination showed two areas of atrophy from which masses extended into the vitreous. The laboratory examinations were negative.

Synchysis scintillans

DR. RALPH I. LLOYD presented a case which will be published in full in the April issue of this Journal.

Growth of cells of the eye outside the body

DR. D. B. KIRBY, who has been experimenting along these lines, gave the following conclusions:

(1) Differentiation of the posterior cells of the lens vesicle into lens cortex has been observed in vitro.

(2) It is possible to dissect out the lens of the five day embryo chick in such a manner as to free it from all extraneous cells.

(3) Lens epithelium even at a very early stage is contained within a cuticula.

(4) Lens epithelium under proper conditions will live, migrate, divide, and multiply in vitro in primary explants.

(5) An unmixed strain of lens epithelium can be propagated. It will divide and multiply in vitro in primary explants. This strain can be utilized for control experiments on the nutrition of these cells.

Several reels of film demonstrating the growth of these cells were shown.

WM. F. C. STEINBUGLER,
Secretary.

PUGET SOUND ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY.

December 20, 1927.

DR. H. V. WÜRDEMANN presiding

Traumatic glaucoma

DR. F. A. BRUGMAN presented a man who had been struck in the left eye

with a nail. After the accident there was a small conjunctival wound near the limbus, the pupil was dilated and immobile. When the pupil contracted under eserine two tears through the muscle layer only were seen in the iris. The media were clear at first but later became somewhat turbid and vision was reduced to 20/200. At no time had there been an exudate in the anterior chamber or punctate keratitis.

Tension, at first normal, rose to 55 mm. (Schiotz) after two weeks and remained there. Eserine contracted the pupil to three mm. but did not reduce the tension. There was no disc cupping and no nasal step, although the field was contracted. Vision improved to 20/100. Tension of the right eye varied from 35 to 44 mm. and became normal under eserine. The question was whether the tension rise was due to a cyclitis or to a glaucoma brought on by trauma in a glaucomatous subject.

Discussion. DR. W. O. BELL said that as the larger iris tear was parallel to the iris root, the resulting prolapse of the base of the iris into the filtration angle might have been an active factor in producing and maintaining increased intraocular pressure. Under observation of the slit-lamp, the fibers of the iris contracted in the two thirds of the iris uninvolved, while in the involved third there was no contraction to light stimulus.

Dr. J. S. DAVIES mentioned the necessity of searching for focal infections.

Dr. J. E. CLARKE said that Orcutt of Chicago advised atropin instead of eserine in traumatic iridocyclitis accompanied by tension. He stated that when inflammation and swelling of the ciliary body were relieved the pain and tension quickly subsided. Dr. Clarke said he used atropin in all injured iris cases but, since this one had increased tension so long, one should be prepared for an emergency following the use of atropin.

Dr. H. V. WÜRDEMANN said that he believed the cause of the hypertension to be a subacute cyclitis and not a true glaucoma, and that, inasmuch as the visual field and optic nerve were practically normal, continuation of the

miotics rather than operation was indicated.

Dr. W. F. HOFFMAN mentioned the paper by Dr. Park Lewis on non-operative treatment of inflammatory glaucoma, in which he advocated the use of heat, and said that a case personally treated showed a good result. He added that it was a therapeutic measure that could do no harm and might be of considerable benefit in this case, and he suggested its trial.

Dr. C. W. SHANNON said that although a diagnosis of glaucoma was mentioned, in the absence of other symptoms except hypertension he believed the persistent tension was due to congestion and possible blood-clot obstruction of the ciliary angle, and he would accordingly try homatropin, cocaine, and heat first, and possibly atropin before any surgical procedure.

Dr. BRUGMAN, in closing, added that focal infections had been looked for and some teeth had been extracted. He also stated that the patient did not want an operation.

Staphyloma corneae (bilateral)

Dr. W. O. BELL presented R. S., male, white, aged 11 months. There had been a Neisserian infection in both eyes three or four days after birth. In spite of treatment, extensive ulceration of both corneas resulted, with subsequent anterior staphylomas.

Three months later there was hypertension in the right eye with almost complete anterior staphyloma. In the left eye was a protruding staphyloma, a clear rim of cornea, a minus tension.

Discussion. Dr. H. L. GOSS, who had attended the child during the conjunctivitis, stated that there had never been a perforation and the condition was an ectasia.

Scleritis profunda with keratitis tuberculosa

Dr. H. SCHOFFMAN presented a white American girl aged ten years, seen at the end of July, 1927. She was only child of a tuberculous mother who had died when patient was one and a half years old. For the last five months the left eye had been sore, gradually getting redder and more painful. She

had lost eight pounds in weight; had a poor appetite and was nervous and apathetic.

The child was well built and well nourished. On the temporal side of the sclera of the right eye there was a small slightly raised patch of pale rose color. The left eye was tender to pressure. A well marked, dark red, slightly bluish, large patch in the sclera extended from the limbus. The adjacent cornea was implicated. There were individual deep grey spots, which formed an opacity. There was circumcorneal injection. The iris was very slightly involved. Vision could not be accurately taken on account of photophobia and lacrimation. Conjunctiva, lens, media, and fundus were negative.

Atropin and hot applications for several weeks produced no improvement. The temperature was taken twice daily and ranged between 99° and 100° by mouth. Blood Wassermann was negative, as were blood and urine. Von Pirquet reaction was strongly positive. From the end of August, 1927, to date, the patient had been getting tuberculin O.T. hypodermically, gradually increasing from 0.001 mg. The dose 0.08 mg. gave a reaction in the previously uninvolved central part of the cornea. There was no general reaction. The dose reduced to 0.04 seemed to be the best tolerated.

After three weeks of tuberculin treatment the temperature returned to normal, the symptoms of acute inflammation subsided, and the eye started improving. Appetite increased rapidly to a state of being hungry all the time. Patient gained ten pounds in four months without being on any standard diet, helped with house work, and went to school. There remained some discoloration of the sclera and a nebula of the cornea.

In conclusion, tuberculin should not be given to a patient who was running a fever. Tuberculosis well developed in other parts of the body seemed to make the eye comparatively immune. In the wards of a tuberculosis hospital one saw no cases of ocular tuberculosis.

Discussion. DR. H. V. WÜRDEMANN said that he had seen this case in con-

sultation four months before, when it had the aspect of a true keratitis scleratoides. All the other causes had been eliminated by physical and laboratory examinations. This had been a marked example of the beneficial local effects of tuberculin treatment. Local improvement or cure followed rapidly in some cases but much general treatment and time were necessary to secure a systemic cure.

DR. W. F. HOFFMAN said that his experience with tuberculin had been decidedly encouraging, that undoubtedly some cases of sclerosing keratitis were of tuberculous character. However, he did not feel that they yielded to tuberculin therapy as rapidly as some other tuberculous manifestations.

Subconjunctival dislocation of lens

DR. W. F. HOFFMAN presented Mr. J., aged 84 years. About a week ago this old gentleman while splitting wood was struck in the left eye by a large chip. He did not think very much of it at the time but soon discovered that his vision was practically gone.

The anterior segment was markedly injected and there was some ciliary injection. Just three mm. above the upper limbus, there was a black line, apparently a rupture of the sclera. In the upper nasal quadrant of the eye, the lens could be plainly seen, lying under the conjunctiva. The iris was badly torn and the pupil contained some capsular débris. The fundus could not be seen.

Discussion. DR. H. V. WÜRDEMANN said it was an extremely rare condition, he having seen only one other in forty years. There was a rupture of the sclera at its weakest part, the corneo-scleral junction. The lens should be excised.

Microphthalmos

DR. M. J. MORRIS presented J. B., a girl aged 21 years, who had come Nov. 5, 1927, to find out whether or not an artificial eye could be worn over her right globe, which from birth had remained very small. Physical examination gave negative results, except for the anomaly in size of the right eye. The eyeball was round, ten or twelve

mm. in diameter, placed far back in the orbit. The pupil was pinpoint in size and immobile, orbital tissue covered the eyeball as far as the margin of the cornea. The orbital cavity was apparently the same size as on the other side, but the palpebral fissure shorter in length. Dr. Morris advised enucleation of the small eye and plastic operation to enlarge the palpebral fissure.

Discussion. DR. W. F. HOFFMAN and DR. E. J. CLARKE thought an enucleation should be done, as the wearing of a prosthesis over the small eye was dangerous.

Persistent pupillary membrane

DR. L. L. MCCOY presented a case of persistent bilateral pupillary membrane in a boy with compound myopic astigmatism.

Embolism of central retinal artery

DR. H. L. GOSS presented such a case in a male negro aged seventy years. The other eye showed marked retinal arteriosclerosis consecutive to hypertension.

Discussion. DR. W. F. HOFFMAN had recently seen two cases, and recalled that Dr. Greenwood of Boston had reported a number of extraordinary results where the patient was seen in from twenty-four to thirty-six hours after onset; some of these cases having an end result of 20/20 vision.

DR. L. L. MCCOY reported a similar case with high blood pressure and marked arteriosclerosis.

WILL OTTO BELL,
Secretary

MEMPHIS SOCIETY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY

January 10, 1928.

DR. J. N. McLANE presiding

Traumatic iridodialysis, iridodonesis, and secondary glaucoma

DR. E. C. ELLETT presented Mr. C. L. G., aged 31 years, who was first seen January 2, 1928, following an injury to the left eye on Dec. 17, 1927, when a firecracker exploded in his face.

Vision was O. D. 20/20, O. S. 20/100. The left eye showed the iridodialysis now present, a well developed iritis, and a flake of lymph on the anterior capsule. The fundus was normal. Tension was normal to fingers. Atropin and hot applications were ordered. The eye was comfortable until January 4, when a secondary glaucoma developed with severe pain; tension, Schiötz, was 60 mm. Dionin, eserine and hot applications were administered. January 6, the eye felt much better. January 7, vision was 20/70, tension 50 mm., the globe was clearing and was without pain. January 10, vision was 20/70, tension was 30 mm., and for the first time the iridodonesis of the inferior inner quadrant was seen, although the chamber and iris had been carefully inspected to determine the presence of a lenticular subluxation.

Traumatic amblyopia

DR. A. C. LEWIS presented a case of bilateral traumatic amblyopia of central origin.

On the night of October 29, 1926, Mr. L. S. was slugged by a footpad with an unknown weapon, robbed, and left unconscious in the street. He remained unconscious for two days and was confined to his bed in a serious condition for several weeks.

His vision was only slightly affected at first, but soon began to fail gradually, and at the end of five months he was almost blind. After remaining in semi-blindness for about five months, during which time he could scarcely see to move around, the vision began slowly to improve.

When first seen on November 26, 1927, vision in O. D. equalled 20/200, O. S. 10/200. The eyes appeared normal externally. Pupils were equal in size and reacted normally to light and accommodation. Visual field appeared normal and no scotomata were found. Tension was normal to palpation. The fundi showed no definite changes in the discs, retinas, or blood vessels. No diplopia had existed at any time since the injury. His physician had kept him on iodides, strychnine, and nuxvomica most of the time since the injury.

A scar could still be seen on the back of the head at the site of the blow, just above the external occipital protuberance. The exact nature of the lesion was uncertain, but it was probably located in either the cortical visual center or in the "primary optic centers".

Discussion. DR. J. B. STANFORD thought the fundi were not absolutely normal, as the discs seemed pale and the margins were not sharp, as following an optic neuritis. At the superior aspect of the right disc were several small retinal hemorrhages which he thought might have some bearing on the case.

DR. A. C. LEWIS, in closing, said both eyes had been blinded simultaneously, which suggested a hemorrhage in the cortex.

Choroidal detachment

DR. E. C. ELLETT presented Mrs. A., aged fifty years, who had been trephined for chronic glaucoma of the left eye on December 20. Following the operation there was a double choroidal detachment, the temporal one being very large and well forward. It involved about one fourth of the eyeground, but was receding. The right eye developed acute glaucoma January 2. Iridectomy was done January 4.

Discussion. DR. J. B. BLUE said he had had a case of complete choroidal detachment following trephining in which there had been reattachment with better vision than before operation. He wondered if detachments were more frequent following trephining than after other forms of glaucoma operation.

DR. P. M. LEWIS had seen two such cases following trephining, in one of which there was a large choroidal hemorrhage which resulted in a persistent detachment of the retina.

DR. A. E. GILL had never seen a choroidal detachment before and wondered if the mechanism was due to drainage.

DR. ELLETT, closing, said that choroidal detachments were rather frequent after trephining, and, although alarming looking complications, they always got well.

Dental and tonsillar foci of infection

DR. E. C. ELLETT reported two cases of eye conditions apparently due to infected teeth.

W. T., aged 51 years, was seen Oct. 17, 1927, with blurring of the vision in the right eye. Vision was 1/200 with a large central scotoma and a normal eyeground, but X-ray showed a diseased tooth in the right upper jaw. This was pulled. On October 29, vision of O. D. was 15/40; November 25, 15/20; December 24, 20/20. Besides having the tooth pulled he was given "mixed treatment". General physical and laboratory examination was negative.

B. H., aged 56 years, was treated several years ago for iridocyclitis with secondary hypertension. After several months of orthodox treatment without effect, a root was found in the jaw, all the teeth having been extracted. Removal of the root was followed by a return of the eye to normal in three days.

DR. ELLETT also reported a similar case due to infection from the tonsils. A woman aged 40 years complained of failing vision for three weeks. Vision O. D. was counting fingers at one foot; O. S. 20/30 with glasses. The eyegrounds showed slight changes. The optic nerve was a little pale with a few deep pigment spots around it. In the left eye the disc edges were hazy and the vessels a little wavy. General physical examinations showed negative Wassermann, infected tonsils, normal sinuses, and an unerupted upper third molar, all of the other teeth being out. Tonsils were removed June 21. June 30, vision O. D. was 20/40; July 3, O. D. 20/30; July 5, tooth extracted; 21st, O. D. 20/25. This was in 1923 and there had been no return of the trouble.

Sympathetic ophthalmia

DR. A. C. LEWIS reported the case of a fourteen year old boy who on Nov. 29, 1927, came to him with the following history. One month ago, while playing with an aeroplane which he had made out of a piece of tin and a rubber band,

he was struck by it in the left eye. All vision was immediately lost. He had been under treatment since the accident, but the eye had become more painful daily. Examination showed a perforating wound of the ciliary region extending to the limbus at two o'clock. The anterior chamber was shallow, pupil fixed, posterior synechiae present, lens swollen and cloudy, vitreous opaque. The other eye showed slight congestion, chemosis, lachrymation, and photophobia.

The injured eye was enucleated on the same day under general anesthesia.

(No ball implantation was made.) The wound healed promptly. On Dec. 3, 1927, there was more congestion and photophobia of the remaining eye than before enucleation of the injured eye. Vision was reduced to 20/50. Vitreous was hazy and punctate keratitis was present. Under atropin, dionin, hot compresses, and protection from light, the eye had improved. When seen yesterday, vision was 20/20-2 and most of the inflammatory symptoms had disappeared.

DR. R. O. RYCHENER,
Secretary.

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THE DIAGNOSIS OF HEMI-ANOPSIA

The interruption of a nerve fiber causes loss of its function, whether this be by cutting across with a knife, or gunshot, or contusion, or pressure, or disease in the nerve trunk. For the part of the fiber that is separated from the cell body and nucleus the damage is permanent, and goes on to atrophy. The part connected with the nucleus may retain its function; and in some peripheral nerves it may grow out to replace the atrophic portion, so that in time the lost sensation or motor control may be restored. But in the central nervous system, and in the optic tracts and nerves, the loss of function and atrophy are permanent.

The sensory fibers in the optic nerve, chiasm, and optic tracts are connected with nuclei in the external geniculate body. If a lesion involving these fibers is in front of these basal ganglia, the part of the visual fibers extending into the optic nerve and retina undergoes atrophy; so that vision and the reaction of the pupil to light are destroyed. If the lesion is behind the basal ganglia, between the geniculate body and the cerebral cortex, vision is destroyed; but the reaction of the pupil to light is preserved, and the optic nerve does not atrophy. A lesion of one optic tract

behind the chiasm, or of the fibers connecting it with the visual centers in the occipital lobe, causes homonymous hemianopsia. When such a lesion is situated in front of the geniculate body, the pupil reaction to light is lost. But when the lesion is behind the geniculate body, in the optic radiations or cortex, the reaction of the pupil to light is preserved; the so-called hemianopic pupil reaction of Wernicke.

When Wernicke called attention to this pupil reaction, it was expected to have great practical value in discriminating between lesions of the base, involving the optic tracts, and lesions within the brain, that left the connection of the retina with the geniculate body unharmed. These expectations have been largely disappointed. Some clinicians who have tried to use it say that the hemianopic pupil reaction cannot be relied on. Attempts to use laboratory methods for localizing the light impression on one small part of the retina have not given positive results definite enough to be of much practical value. The plan described by J. H. Fisher (Transactions of the Ophthalmological Society of the United Kingdom, 1921, vol. 41, p. 7) does not seem to have come into such general use as to redeem the reputation of the "Wernicke test"; although it certainly gives better

evidence than the laboratory refinements.

For the differential diagnosis of hemianopsias due to lesions of the visual tract, Lauber calls attention to the ophthalmoscopic changes produced by partial atrophy of the optic nerve when the lesion is peripheral to the geniculate body. (Meeting of the German Ophthalmological Society, 1927, p. 89). Lauber reports a case in which, sixteen years after luetic infection, there was tabes with left homonymous hemianopsia. With the ophthalmoscope, the temporal half of the right optic disc was markedly pale and destitute of small vessels. In the left eye the nasal half of the disc was paler than the temporal half. When the colored illustrations which Lauber has given are looked at singly, the changes in the optic disc are not striking. But when the two pictures are compared the difference is unmistakable. Lauber also gives pictures of the appearances with red-free light. In that of the right eye, the vessels supplying the macula are small, and the retinal nerve fiber layer is much more noticeable in the nasal than in the temporal part of the retina. In the picture of the left fundus, the macular vessels are shown much larger, and the nerve fibers are more noticeable in the temporal portion of the retina.

For the practical use of these symptoms in the diagnostic location of lesions causing homonymous hemianopsia, the ophthalmoscopic appearances of the two eyes should be repeatedly observed and compared under identical conditions. The ophthalmoscopic differences are not likely to be noticeable until several weeks after the lesion has caused the hemianopsia. Lesions about the apex of the orbit causing blindness, as after blows on the head causing fracture, or hemorrhage in the nerve sheath, do not cause visible atrophy of the optic nerve for several weeks. But, carefully looked for and studied, the ophthalmoscopic appearances of hemianopic atrophy may in the end throw valuable light on the etiology, treatment, and prognosis of basal hemianopsias. They offer one more valuable field in which ophthalmoscopy can assist in general diagnosis. E. J.

CAUSES OF TOBACCO AMBLYOPIA

All through the literature of this condition there are evidences that it arises from peculiarities of constitution, idiosyncrasy, and failing power to resist toxic influences. Why should Turkey, Cuba, and other countries be relatively free from it, in spite of large consumption of tobacco? Why should some who have used very large quantities of tobacco escape entirely, while others who have used it freely all their lives only suffered after they had diminished the amount used? Why should it generally appear after the age of fifty, in one who had always smoked freely? Why, when it did appear at an early age, was there often a history that the use of tobacco was supplemented by free indulgence in alcoholic drinks?

These questions were always puzzling but they always pointed to a factor of individual predisposition; or to powers of resistance lowered by senile decline or temporary indisposition.

The monograph of Usher and Elderton, noticed elsewhere (p. 241) is one that throws some light on this obscure side of the subject. It seems to show that while alcoholism may be one predisposing cause, it must be only one among several such sources of danger, that beset the path of the habitual smoker as he passes middle age. Another direction in which light may be looked for is in the investigation and careful record of all the disturbances of general nutrition that the patient may have experienced before the tobacco amblyopia developed. Such a study was made by de Schweinitz and Edsall with regard to disturbances of elimination ("Transactions American Ophthalmological Society, 1903, page 41). It may well suggest other lines on which similar investigations might be pressed.

An interesting fact brought out by Usher and Elderton is that women are more likely to suffer from tobacco amblyopia after using comparatively small amounts than are men. This is of practical importance now that women are taking up the smoking of tobacco. The writers' limited observations seem to indicate that women are more liable

than men to other disturbances of nutrition from the influence of tobacco. The possible dangers of tobacco amblyopia must now be borne in mind when investigating visual disturbances in women.

E. J.

OCULAR VERTIGO

The careful physician must be constantly on guard against the tendency to attribute dogmatically to a particular etiology a symptom which may have arisen from any one or several of a group of causes. This precaution is especially desirable if an error in diagnosis may subject the patient to an unnecessary and useless operation.

Among the symptoms which come to the attention of the ophthalmologist, but which may arise from causes outside the field of his specialty, is that of vertigo or dizziness. Some of the causes of vertigo are internal ear disease (labyrinthine), arteriosclerosis, ocular disease, anemia, heart disease, tabes, exophthalmic goiter, and cerebral disease or tumor.

Before the Section of Laryngology, Otology, and Rhinology of the American Medical Association, at its last meeting, George Portmann of Bordeaux described an operation for the relief of vertigo by opening the saccus endolymphaticus. The author anticipated from this operation "an era full of promise for the surgical treatment of a great number of labyrinthine diseases of which one symptom at least, vertigo, is particularly distressing to the patient". Several of Portmann's patients had been cured by this operation, although the severity of the vertigo had previously prevented them from carrying on any kind of work. The discussion following the reading of the paper showed some doubt as to the ease with which it could be determined that any given case of vertigo was due to labyrinthine disease.

The following somewhat unusual case illustrates how easily a delicate and important operation of this character might be based upon an erroneous diagnosis, while the eyes were actually at fault.

A woman of forty-one years had been

so disturbed by almost constant dizziness, with frequent spells of nausea, vomiting, and headache, that she was unable to retain an amount of food adequate for normal nutrition. Examination by a leading otologist had led to a diagnosis of labyrinthine disease. The patient's general physician, however, felt that the eyes might possibly be at fault. The patient had not previously worn glasses.

Under cycloplegia she was found to require R. +0.62 sph. +0.37 cyl. ax. 120°, L. +0.62 sph. +0.62 cyl. ax. 30°; the cylindrical corrections for the two eyes being thus unequal in amount and asymmetrical in axis. These lenses were prescribed for constant use; without postcycloplegic reexamination, although the preliminary examination had shown less sphere.

Although the eyes did not immediately relax completely to the full hyperopic correction, yet the symptoms were promptly relieved, and in the course of a few weeks the patient had gained ten pounds, a result which was unquestionably associated with her ability to retain food.

No doubt patients have been given glasses in a vain hope of curing vertigo which was due to other causes; but this patient might easily have been subjected to an operation upon the internal ear in the mistaken belief that her dizziness, nausea, and vomiting arose from labyrinthine disease.

W. H. C.

BILATERAL CATARACT EXTRACTION

Most ophthalmic surgeons will agree absolutely with the late C. H. Beard in regarding as the "height of folly" the practice of extracting cataracts from both eyes at one sitting. Apart from the tragic reaction upon patient and surgeon from complications or failure involving both eyes simultaneously, the experience as to the individual patient derived from a first operation may at times improve the chance of success at the second venture.

Yet from so eminent an ophthalmologist as Professor Elschnig of Prague comes a frank expression of opinion

against this dogma. Elschmig finds many patients in whom bilateral extraction is to be recommended. With Zentner (*Archiv für Augenheilkunde*, volume 98, part 3) he records this procedure in five hundred and seventy-eight patients during the period from 1911 to 1925. This number does not include fifty-three patients in whom both eyes were operated upon simultaneously during 1925 by the Barraquer method. The 578 patients, or 1156 eyes, included 698 incipient or immature cataracts, 273 mature or approximately so, and 184 hypermature.

Simple extraction on both eyes was done in 344 cases, simple in one eye and combined in the other 141 cases, and combined extraction in both eyes in 143 cases. If vitreous prolapse occurred in the first eye, the second was not proceeded with at that time. In the presence of any hint of psychic disturbance, at least one and often both eyes were left open after the first twenty-four hours.

Eight eyes were lost, seven from wound suppuration, one through expulsive hemorrhage. In this single case of expulsive hemorrhage the accident was unilateral, in a decrepit patient of seventy-eight years with hypermature cataract in both eyes.

The following precautions were adhered to rigidly: (1) preliminary examination, and treatment in case of need (circulation, heart, kidney, digestive tract, tonsils, teeth, and so on); (2) sterility of the conjunctival sac; (3) mental quietude, obtained by administering a sedative one hour before operation; (4) in the presence of high blood pressure, blood-letting an hour or an hour and a half before operation; (5) scrupulous after-care and nursing; (6) miscellaneous auxiliary procedures such as akinesia, retrobulbar anesthesia, a check suture, conjunctival suture, and application of iodine to the wound.

Many will think that the bilateral method can be employed only by those for whom the spectacular features of surgery have a strong appeal, and who prefer brilliancy of achievement in successful cases to a maximum average of safety. But Elschmig's opinion is that of a seasoned clinician and opera-

tor, and the stated results can hardly be said to condemn his point of view. It may be that here, as in regard to intracapsular extraction, radical methods must be reserved for the ophthalmic surgeon who performs a great many operations, while the majority will do more wisely to adhere to conservative and generally accepted technique.

W. H. C.

Erratum

In the printer's final makeup of the February issue, a complete line was dropped from the top of column 2, page 140, as follows: "This individual, who had an anterior. . . ."

BOOK NOTICES

Grundriss der Refraktions- und Brillenlehre für Studierende und Ärzte. Prof. Dr. C. A. Hegner, Luzern. 144 pages, 94 figures in the text. 1927, Urban und Schwarzenberg, Berlin and Vienna. Price, paper cover 7 marks, bound 8.50 marks.

The author criticizes a rather common impression that the knowledge and application of certain optical formulas is entirely superfluous for the ophthalmologist, and refers to the fact that many nonprofessional workers have successfully entered the field of ophthalmologic optics. This new work on the subject seeks to give a simple and condensed explanation of the optical processes in the eye, the knowledge of which belongs to the equipment of the modern ophthalmologist. It is hoped that the volume may serve as an introduction to the more detailed works of Gullstrand, Rohr, and others.

In its mathematical statement of optical principles and formulas, the treatment of the subject is technically faultless. The work might however have been made more generally useful to students and physicians by a willingness to expand the perfection of mathematical expression into language more readily comprehensible to those whose contact with mathematical principles is somewhat less intimate and habitual than that of the author. For example, in the consideration of correcting lenses for

myopia, strictly mathematical analysis may find no fault with the statement that "the focal length of the correcting spectacle lens is equal to the sum of the distance of the far point and of the distance of the spectacle lens from the anterior principal point of the eye". But to many readers it would be advisable to suggest that the first quantity (distance of far point) is a negative one, and the second quantity (distance of lens) a positive one.

W. H. C.

Consumption of tobacco and alcohol in cases of tobacco amblyopia.

General discussion by C. H. Usher, M. B., Aberdeen. Detailed statistical discussion by Ethel M. Elerton, London. Paper, quarto, 45 pp., 11 diagrams. Cambridge University Press, 1927.

This monograph is a reprint from the *Annals of Eugenics* (vol. 2, October, 1927). Since tobacco amblyopia was recognized as a clinical entity, there have been skeptics who doubted if it were caused by tobacco, and the shares of causation to be assigned to tobacco and alcohol have been in dispute. These studies are based on the records of 1100 cases occurring in Aberdeen, Scotland; a number that indicates that the causes of such amblyopia are active among its population of nearly 200,000. The important conclusions here arrived at are that as a rule the subjects of tobacco amblyopia are not heavy smokers, that more often the age is above than below fifty years, and that rather more than two-thirds of the victims drink no more than one glass of beer or whiskey daily. One hundred and twelve total abstainers from alcohol were included in this series. "In women a much smaller quantity of tobacco than is taken by men is sufficient to cause amblyopia". The evidence here furnished does not indicate that bright light has an influence in producing the central scotoma of tobacco amblyopia.

For all who wish to study tobacco amblyopia or the important problems connected with it, this monograph will be an extremely useful original source of information. It illustrates that good

work, rather than exceptional opportunities for observation, is the essential factor for the production of valuable medical literature. The studies in this instance were not confined to the cases seen in Aberdeen, but included a critical examination of the mass of literature bearing upon the subject.

E. J.

American Academy of Ophthalmology and Oto-Laryngology, transactions 1927. Editor, Clarence Loeb. Cloth, octavo, 495 p., ill. Chicago, published by the Academy.

The publication of this volume in three months after the meeting whose transactions it records is a notable achievement for the editor and the others participating in the collection and preparation of the matter here included. Such early publication of the proceedings of a meeting requires effort and team work, but is worth all that is necessary to accomplish it.

Of this volume 151 pages deal with ophthalmology, and 135 pages with otolaryngology, while the remainder is devoted to papers of interest to both ophthalmologist and otolaryngologist. This last division includes the address of the president, which is called "a sermon", and also the address of the guest of honor, Professor Birkett of Montreal, in which he gave personal and biographic sketches of Frank Buller, ophthalmologist, Adam Politzer, otologist, and George M. Lefferts, the laryngologist. There is also the symposium of forty-five pages on focal infection. A report of work done by the research fellow of the Academy, Dr. Daniel B. Kirby, is devoted to standards for judging the progress of arrest of cataract.

The alphabetic and geographic lists of members of the Academy occupy eighty pages. The minutes, the lists of former officers, and the indexes are all valuable references for the members. The descriptions and pictures of new instruments and apparatus will interest all readers. Starting thirty-three years ago as the Western Association, the Academy through its transactions and its endowment to assist research, has

made notable additions to the later literature of the specialties which its members cultivate.

E. J.

Second report of Commission on Medical Education; January, 1928. (Office, 215 Whitney avenue, New Haven, Connecticut) Paper, 86 pages.

This report is useful in its assembling of the opinions of successful physicians, rather than as offering any categorical conclusions as to the defects and the needs of medical education. It is especially based upon over sixteen hundred replies received from physicians whose names had been given by the officers of four hundred county medical societies as successful practitioners. The contents tabulate the training and opinions of these practitioners, discuss the demands of the community upon medical practitioners, and review various data and opinions regarding state medical boards and medical school scholarship. A summary emphasizes the extent to which the length and efficiency of medical education depends upon the quality of preliminary education. It suggests "that the present system of education in the United States has a distinct tendency to provide a diffused, superficial training for the average student rather than a thorough understanding of any one field, and makes very little provision for the student of unusual promise who may have special interests", and refers to a "general consensus of opinion that the quality of education in this country is still considerably below that of a number of European countries". As to the length of preparation for a medical career, time could be saved in preliminary institutions "by the elimination of unnecessary vacations and by the stimulation of better scholarship". In the medical school proper, time could be saved if students were selected more on the basis of individual capacity than on the basis of degrees, courses, and grades".

W. H. C.

The pathology of individuality in ophthalmology. V. Rossi. Paper, 86 pages. Naples, Stab. Tip. Editoriale Tocco, 1927.

The author seeks to write philosophically concerning the broader vital relationships of ocular diseases and anomalies, but his language and concepts are frequently diffuse and intangible. The more definite and comprehensible paragraphs of the monograph consist of quotations from medical writers whose works are listed in a four-page bibliography, chiefly in Italian and French. As examples of the author's style one may quote from the chapter on "embryologic factors of individuality in ophthalmology": "The blastodermic layers contribute . . . to the embryogenesis of the eye; but, if hereditary factors of any nature disturb the normal relationship and the harmony of these layers, the resulting organ will present an anomaly, a weakness of constitution which, although more directly limited to the membrane derived from the more compromised layer, will yet impress upon the other continuous and contiguous membranes a deviation from the normal, either positive or negative." Again: "An individuality but little evolved morphologically, with prevalence of supportive tissues over those more highly differentiated, with a wealth of development of the stroma as compared with poverty of structure in the parenchymas, are the factors which predispose to the localization of syphilis in the uveal segment of mesodermic origin."

W. H. C.

Ministry of the Interior, Egypt, Department of Public Health. Eleventh and twelfth annual reports of the Ophthalmic Section, 1923 and 1924. Government Press, Cairo, 1927.

These reports, chiefly composed of the "dry bones" of administrative statistics, are of general interest in the figures which relate to the marked results obtained in the treatment of the serious stages of trachoma in school children.

W. H. C.

Verlagskatalog, J. F. Bergmann in München, 1878-1928. Octavo, 166 pages.

This is a catalogue, but one of unusual character. It celebrates fifty years of existence of the firm (1878 to the end of 1927), and its alphabetical list covers 136 pages. It carries as frontispiece a beautiful photogravure portrait of Fritz Bergmann, who founded the enterprise in Wiesbaden, and whose unquestionably distinguished service to medical and technical literature was recognized in 1907 by an honorary degree of doctor of medicine from the University of Würzburg. The removal of the firm of Bergmann to Munich in 1920 was in part due to difficulties associated with the occupation of Wiesbaden by the French after the close of the war. There is food for the imagination in the part played by a large publishing house in the educational life of its own and other countries.

W. H. C.

CORRESPONDENCE

Nomenclature of active optic nerve pathology

To the editor: The Indiana Academy of Ophthalmology and Otolaryngology has become officially interested in the terms used to describe active involvement of the optic nerve. At the January, 1927, meeting, Dr. C. Norman Howard, of Warsaw, Indiana, read a paper on the etiology of papilledema and retrobulbar neuritis. In his concluding remarks, the author directed attention to the confusion that exists from the indiscriminate use of terms to designate the ophthalmoscopic and other signs of diseases which affect the optic nerve. To illustrate the point, he quoted from May, Diseases of the Eye, eleventh edition, 1924, page 271, as follows: "Intraocular optic neuritis . . . is also known as descending neuritis, papillitis, choked disc and papilledema. These terms are often used interchangeably and much confusion in regard to the exact meaning of each has arisen in consequence". The interest of the

Academy was aroused and a committee was appointed.

It was first ascertained that no committee on nomenclature had been provided for the Section on Ophthalmology of the American Medical Association, the American Academy of Ophthalmology and Otolaryngology, or the American Ophthalmological Society.

A questionnaire was then prepared by listing terms with definitions for each in harmony with established and current literature. These were sent to 123 ophthalmologists and neurologists representing a cross section of opinion in North America and England. Fifty-eight replies were received. The definitions submitted and the principal results of the inquiry are here tabulated.

	Yes	No	Qualified
1. Retrobulbar neuritis: A neuritis of the orbital part of the nerve, with no or slight ophthalmoscopic evidence. . . .	54	2	1
2. Optic neuritis: An inflammation of the nerve, resulting in papillitis.	49	3	0
3. Papillitis: An inflammation and moderate swelling of the disc, which may or may not extend into the retina. . . .	45	2	1
4. Neuroretinitis: A papillitis with retinal hemorrhages and exudates.	41	7	4
4B. Is this a proper term to indicate a swelling of the papilla due to nephritis?	25	22	6
5. Optic neuritis with edema: An edema of the disc associated with sinus or other infections.	26	16	2
6. Papilledema: An edema of the disc due to increased intracranial pressure.	46	5	3
7. Choked disc: Synonymous with papilledema.	44	6	0

Some of the replies were accompanied by remarks which denoted dissatisfaction with existing conditions and exhibited a lively interest in any means which might remedy the situation, so that one who spoke or wrote could express his meaning with exactness.

The committee reported at the December, 1927, meeting of the Academy, and the definitions were officially approved as written, except those numbered 4 B and 5. The Academy then instructed its secretary to communicate

with other societies, hoping that, by cooperative endeavor, terms used to describe active pathology of the optic nerve might be standardized.

While at work on the assignment, the committee was impressed with the idea that the logical direction for simplification was toward a reduction rather than an increase in the number of terms. A speaker or writer could select adjectives to express his meaning more exactly when using any of the recognized terms.

This letter is intended to acquaint the profession generally with the purpose of the Academy. The secretaries of similar organizations are requested to present these proposals to their respective societies for official consideration, and they are also invited to correspond with the Secretary of this Academy. The prosecution of efforts toward reform will depend upon the attitude of the profession as a whole, whether it is or is not content with present usages.

*Indiana Academy of Ophthalmology
and Otolaryngology:*

*C. W. Rutherford, secretary
406 Pennway building,
Indianapolis.*

"Eye physician" or "eye surgeon"?

To the editor: It is interesting to hear that the Guild of Prescription Opticians of America, a worthy organization, at their annual convention at Buffalo, June 17 and 18, 1927, voted to use hereafter in all of their advertising literature the term "eye physician" in place of the word "oculist". This they propose to do to avoid the confusion in the minds of the public which results from the terms optician, oculist, and ophthalmologist.

This is certainly a very laudable endeavor, but the question naturally arises whether they have hit upon the most satisfactory term by which to designate the specialist in ophthalmology. The word "ophthalmologist", we must admit, is too cumbersome and requires an explanation to the ordinary layman. Furthermore it is easily confused with "optometrist", just as "oculist" is readily confused in the minds of the public with "optician".

The suggestion of the term "eye physician" is a very good one, but a consideration of certain phases of the subject may be wise before our profession endorses the action of the Guild of Prescription Opticians. In the first place, ophthalmology is distinctly a surgical specialty and is recognized as belonging to the department of surgery in many of our best schools where the subject is taught. Again, in the practice of ophthalmology the specialist is engaged to a far greater extent in surgical treatment than he is in medical treatment. He trains himself to be able to perform surgical operations, many of which require the highest degree of surgical technique and skill. Furthermore the fitting and application of lenses is a surgical rather than a medical procedure. Just as orthopedics is a surgical specialty and the orthopedic surgeon practices surgery in the fitting of braces and trusses for physical defects of the body, so the eye specialist in fitting glasses, which are in the nature of mechanical appliances or braces for defective eyes, engages in a surgical procedure.

In England all eye specialists are ranked as surgeons and take their degrees of licensure from the Royal College of Surgeons. Most ophthalmic surgeons in England do not even have the degree of Doctor of Medicine.

From the above considerations it seems to me it would be more logical for us to be called "eye surgeons" than "eye physicians", and this term would give us a standing in the minds of the public as being engaged in surgical as well as medical work. It might be well to encourage some expression of opinion from members of our specialty before allowing a tacit endorsement of the action of the Guild of Prescription Opticians, commendable as such action is.

William H. Wilder

Chicago

Sterilization of sharp instruments

To the editor: It is evident from inquiries that I have had that the composition of the solution referred to in my paper on "the sterilization of sharp

instruments" in the January number of the Journal is not sufficiently clear. I should therefore like to have you insert this letter with the following analysis in the Journal at your earliest convenience:

The solution recommended may be written in prescription form as follows:

Liquor cresolis compound	gtts.	x
Liquid albolene	drams	ii
95% alcohol medicated according to formula no. 4, government regulation no. 60	oz.	ii
Commercial chloroform	oz.	ii

Analyzing this prescription we find the following facts:

"Government regulation no. 60, relative to permits, as provided for in table II, National Prohibition Act for the Manufacture of and Traffic in Intoxicating Liquors for Non-Beverage Purposes", effective October 1st, 1927, section 1117, formula no. 4, provides for the sale of 95% alcohol medicated with 1% of Liquor cresolis compound.

Liquor cresolis compound, as defined in U. S. P., 10th Revision, is made up as follows:

Cresol.....	50 c. c.
Linseed Oil.....	350 c. c.
Dekanormal solution of potassium hydroxide.....	22 c. c.
Dekanormal solution of sodium hydroxide.....	88 c. c.
Water q. s. ad.	1000 c. c.

It is imperative that no other medication for denaturing alcohol be substituted for Liquor cresolis compound and that the alcohol used be free from all adulteration.

The above description will leave no possible room for doubt in compounding

the solution which we recommend for the sterilization of sharp instruments.

M. Hayward Post

Prevention of ophthalmia neonatorum

To the editor: For the benefit of my colleagues in obstetric practice, I have had occasion, at odd times, in more or less recent years, to call attention (in journals of general medicine) to a prevailing misconception of the Credé prophylaxis; and to warn them of danger in a failure to have it exact. Credé pointed out (as does the retiring editor of this journal, pp. 148-149) the possible harm to the delicate epithelium from the careless application of the silver solution; the impact of a drop from a medicine dropper had been known to cause excessive reaction, and particularly if followed by lid massage to distribute the drop. For this reason he insisted that a glass rod should supplant the dropper, and the drop be separated from it by capillary attraction, on the bulbar conjunctiva below the cornea; with no handling beyond a gentle closure of the lids. All this, it may be noted, is "ancient history". But with the production, by reputable pharmaceutical houses, of silver nitrate capsules for the convenience of obstetricians, an undue emphasis has been put upon the remedy; which is a remedy only when properly used. In acknowledging the receipt of sample capsules from a drug manufacturer I asked when and how I might expect a silver nitrate solution to become contaminated. But the reply was evasive. Can you tell me?

H. B. Young

Burlington, Iowa

ABSTRACT DEPARTMENT

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I. GENERAL METHODS OF DIAGNOSIS

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The rays from the objective of a projection apparatus leave at a certain angle, which does not change much if the screen is brought nearer, so that it may be considered as constant. If the image of the test type is projected on a screen and the patient is placed next to the objective, the test letters are always seen under the same visual angle whether the screen is brought nearer or removed further. An eye which actually reads the three upper rows at five meters can not read more when the screen is brought nearer, or, under good illumination, removed to ten or fifteen meters. But the malingerer who can read the small letters accepts the suggestion that he should read more if the screen is brought nearer, and acts accordingly.

C. Zimmermann.

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Streiff observed four persons with normal eyes, one with previous neuralgia of the fifth nerve, one with corneal infiltration, one with rheumatic iritis, one with glaucoma simplex, and

one with detachment of the retina and secondary cataract, who complained of a sensation of cold in the eyes even during the hot Italian summer. In the last four cases there was hyperesthesia to touch, and the sensation of cold was in direct proportion to the eye closure. It disappeared after subsidence of the corneal infiltration. The observation shows that cases of peripheral etiology can be distinguished from central cold paresthesia.

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The author emphasizes the simplicity, accuracy, and convenience of this method of noting light sense and adaptation.

The instrument consists of a series of plain dark glasses, which can be fixed in a light-tight frame. These glasses are constructed in such a way that no. 1 lets through 1/10 of the

light; no. 2, 1/100; no. 3, 1/1,000; and so on up to no. 10. The light absorbing power of the glasses is expressed in "photopters", thus indicating the amplitude of adaptation.

The frame consists of two very short tubes. The one is applied light-tight in front of the eye by means of two narrow bandages. For hygienic reasons a piece of black silk-paper with a hole in it for the eye is placed under the frame. The glasses are fixed in the second tube, and then it is pushed into the tube in front of the eye. As a source of illumination the flame of a stearine candle is used at a distance of half a meter.

A differentiation must be made between the primary adaptation which takes place within from ten to fifteen minutes and the secondary which takes place within half to three-quarters of an hour.

D. F. Harbridge.

2. THERAPEUTICS AND OPERATIONS

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Frandsen experimented with mercurochrome in apparently healthy conjunctivas by culturing before and after the use of two per cent solutions of the drug. In scarcely half of the cases was there a tendency to decrease in the number of bacteria. Furthermore, mercurochrome is precipitated by cocaine, holocaine, novocaine, atropine, physostigmine, scopolamine, and numerous other drugs, and these precipitates are decidedly irritating.

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cautiously, but, once initiated, should be carried on intensively for one year, at the end of which period, if the serum reactions show no great weakening, it is best to outline a scheme of treatment which is timed to prevent relapse. Intraspinal treatment should be reserved for those who do not respond satisfactorily to the intravenous method, or in whom a prompt response to treatment is imperative. Nonspecific therapy, especially the malaria treatment for paresis used in Finger's clinic, seems to have a definite, if unexplained, effect and possibly promises much for the future. The author then turns to the treatment of iritis, interstitial keratitis and optic atrophy. Patients with interstitial keratitis or tertiary iritis should also receive the iodides. Treatment should be attempted in all cases of incomplete optic atrophy, beginning with bismuth or mercury, soon adding neoarsphenamine, at first in small, but rapidly increasing doses. The Smith-Ellis routine should be used, unless the spinal fluid is normal. If exacerbations of the symptoms follow the arsenic treatment, it should be stopped for a while and again begun with caution.

M. H. Post.

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Lindstrom treated 23 eye cases with known or suspected tuberculous processes with watery extract of irradiated cod-liver oil. He concludes that the extract may have a marked and sometimes an astonishing effect upon chronic and subchronic processes in the anterior segment of the globe. No harmful effects were observed from the treatment.

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The authors have employed high frequency extensively in many different conditions of the eye for the past two

years. Their first presentation was before the Ophthalmological Society of Paris in February, 1927. The various types of this current have entirely different effects. The most valuable one is that of currents of great intensity and low tension, so-called diathermy.

The authors divide the use of these currents into medical diathermy and surgical diathermy, in the latter of which coagulation is produced. The second type of current is of weak intensity and very high tension. By special instruments the current is applied as desired. Needles, knives, hooks, etc., are used.

The authors have found diathermo-coagulation especially valuable in treating the granulations of trachoma, all types of granuloma, chalazia, pterygia, tumor at the limbus, angiomas, and orbital bands.

A description of the method of use and of special applicators and equipment is given.

L. T. P.

Niederhoff, P. **Absorption spectrum of corodenin in the ultraviolet.** *Klin. M. f. Augenh.*, 1927, v. 79, Aug., p. 158. (2 ill.)

Corodenin, a chinolin derivative with a small addition of suprarenin, manufactured by J. D. Riedel, Berlin, has strong absorptive power for ultraviolet rays, especially between 3,300 and 2,850 μ wave length, and is almost impervious to wave lengths less than 2,600 μ . Hence it may serve as a satisfactory protective against ultraviolet rays.

C. Zimmermann.

Pellathy, A. **Therapeutic tests with sodium bicarbonate.** *Klin. M. f. Augenh.*, 1927, v. 79, Aug., p. 163.

Pellathy saw good results from a one percent solution of this drug in marginal blepharitis. He used subcutaneous injections along the whole length of the lid. In keratitis he used subconjunctival injections. If the effect was not sufficient after a few days, the treatment was discontinued. The result is ascribed to the effect of the drug on circulation or to production of an alkalinity of the tissues.

C. Zimmermann.

Sattler, C. H. **Ephetonin in ophthalmology.** *Klin. M. f. Augenh.*, 1927, v. 79, Oct., p. 524.

Sattler tested the action of ephetonin, a synthetic preparation similar to ephedrin, manufactured by Merck, on the eye. In from 0.1 to 10 percent solutions it dilates the pupil, reaching a maximum after three minutes and lasting from two to three hours. While the enlargement of the palpebral fissure lasts three hours the effect on the pupil generally subsides after from four to six hours. Ephetonin solutions do not suffer from boiling, or standing for months. It dilates the pupil more in the dark than in the light. The ciliary muscle is not influenced by it, but in eyes predisposed to glaucoma the tension is increased by it. However, two percent pilocarpin produces maximal miosis of the pupil diluted by ephetonin. Ten percent solutions do not act more than five percent solutions, which are most recommended for diagnostic purposes, in no way distressing the patient.

C. Zimmermann.

Simon, Joseph M. **Ionisation of the eye.** *Clin. Opht.*, 1927, v. 16, Sept., pp. 483-488.

The author experimented with rabbits by placing the negative pole containing one percent iodide of potash against the eye and the positive pole against the ear. After removal of the solution from the conjunctival sac by lavage with distilled water, the aqueous was withdrawn with a Pravaz syringe and tested for iodine. The amount of current varied from one to five milliamperes and the duration of application from one to thirty minutes. In the one minute experiment five milliamperes were used. All reactions were positive when the fluid was withdrawn immediately after the experiment.

One case, in which three milliamperes were used for thirty minutes, was intensely positive. Thirty minutes after ionisation, twelve rabbits which had had ten minutes exposure to two milliamperes all showed iodide. An-

other series with similar factors showed less intense iodine reaction after sixty minutes, and another group none at all after ninety minutes. Fifteen rabbits in which ten minute exposures of three milliamperes were used were negative as regards the crystalline lens and the vitreous, both immediately after and thirty-five minutes after ionisation. *L. T. P.*

Stange, H. **Clinical report on corodenin as an ocular protective.** *Klin. M. f. Augenh.*, 1927, v. 79, Aug., p. 161.

Corodenin, two drops every three hours, was tested in patients affected with conjunctivitis, keratitis, and iritis, complicated by intense photophobia and lacrimation. It proved to be an excellent remedy for the relief of photophobia and lacrimation by absorption of the ultraviolet rays. The effect lasted for three or four hours, after which the instillation was repeated.

C. Zimmermann.

Young, F. L. **Local anesthesia in eye, nose, and throat work.** *United States Naval Med. Bull.*, 1927, Oct., pp. 879-881.

After eight years of extensive use it has been the experience of the author that every eye, nose, and throat operation performed on a patient twelve years of age or older can best be done under local anesthesia.

A hypodermic injection of morphine, one-sixth grain, and hyoscine, one two-hundred and fiftieth grain, given thirty minutes before operation, has been used routinely in more than 1,200 eye, nose, and throat operations performed under local anesthesia in the last eight years, and, without exception, it has made the operation easier for both patient and physician.

W. H. C.

3. PHYSIOLOGIC OPTICS, REFRACTION, AND COLOR VISION

Fileti, Antonio. **Accommodative asthenopia from indistinct images.** *Annal. di Ottal.*, 1927, v. 55, March-April, p. 258.

While in looking at objects thrown on a screen the accommodation should

not be called into play, when the objects are out of focus and indistinct, the eyes experience a fatigue which the author believes is due to an accommodative strain. In an effort to see clearly, the brain, not being able to decide whether the indistinctness is in the retinal image or the object itself, attempts to correct the retinal image by calling upon the accommodation. Since the indistinctness is in the object on the screen, the effort is unsuccessful, and the varying amounts of accommodation used in the mistaken attempt produce accommodative fatigue.

S. R. Gifford.

Gertz, Hans. **Remarks upon condition of aplanatism.** *Acta Ophth.*, 1927, v. 4, no. 2, p. 164.

This article is interesting to workers in physiological optics and is largely composed of intricate formulæ. It is not susceptible to abstracting.

E. M. Blake.

Kurz, Hermann. **The refraction in feeble-minded individuals.** *Graefe's Arch.*, 1927, v. 118, p. 500.

The author's findings are based upon observations on 216 feeble-minded inmates between four and forty years old in two Swiss institutions. It was found that moderate and high degrees of hyperopia were present in much greater amount in the feeble-minded than among normal individuals of the same age. This smaller amount of total refraction in the eyes of the feeble-minded is due to a relatively too short axis of the eye and therefore apparently to a smaller size of the retina.

H. D. Lamb.

Roth, A. **Experimental basis of skiascopic phenomena.** *Zeit. f. Ophth. Optik*, 1927, v. 15, p. 46. (To be published in partly summarized translation.)

Streiff, J. **A reading mirror with loupe for persons with poor vision.** *Klin. M. f. Augenh.*, 1927, v. 79, Oct., p. 528. (ill.)

To relieve persons with poor vision from having to hold the reading loupe, Streiff places this in a little stand combined with an inclined mirror, which reflects the light of the window on the book and thus furnishes better illumination. The apparatus is manufactured by P. Speich, Genoa, Italy.

C. Zimmermann.

Vajda, Géza. **Stereoscopic vision of monophthalmic persons.** *Klin. M. f. Augenh.*, 1927, v. 79, Sept., p. 312. (4 ill. and 2 tables.)

Vajda describes his method of examination of stereoscopic vision of persons with two eyes and persons who had only one eye. He found the perspective for pictures better in binocular individuals—about twice as good—with one eye as with two eyes. The perspective of persons with one eye was almost as good as that of a single eye of individuals with two eyes. The perspective decreases in proportion with distance, and since this decrease is more rapid in monophthalmic individuals their images are flatter than the monocular images of persons with two eyes.

C. Zimmermann.

4. OCULAR MOVEMENTS

Holm, E. **Hereditary nystagmus.** *Acta Ophth.*, 1926, v. 4, no. 1, p. 20.

Congenital, hereditary nystagmus is considered by Holm as an affection due to a defect in the development of the eye and an ensuing amblyopia. Two types are recognized, the first appearing by direct transmission and affecting both sexes, the second occurring usually only in sons but transmitted by the daughters, following the rule of sex-limited recessive descent. Head-shaking, amblyopia, and astigmatism are usually present. Partial albinism, lack of macular and foveolar reflexes, and aberrant arrangement of vessels are frequently observed. Two families with hereditary nystagmus are reported by the author.

E. M. Blake.

Spiller, Wm. G. **Unilateral (unassociated) innervation of the ocular mus-**

cles. *Arch. of Neurol. and Psychiat.*, 1927, Nov., pp. 691-708.

The case studied and reported in this paper was one in which normal associated lateral ocular movements were present, but in addition the patient had the power of maintaining fixation of either eye on an object directly in front of him while he slowly rotated the other eye widely outward and brought it back on command. *W. H. C.*

Lutz, Anton. **Bilateral internuclear ophthalmoplegia.** *Arch. f. Ophth.*, v. 118, 1927, p. 470.

Cases of bilateral internuclear ophthalmoplegia previously reported have been due to a fall, to vascular disorders, to toxic damage of the posterior longitudinal bundle, and to syphilis.

The final outcome was a cure in five cases after lasting two to three months. In the remaining three cases there was no report on this point. The vertical movements of the eyes and the pupillary reactions were always unaffected. In all the bilateral cases there was dissociation of the internus functions for looking sideways and for convergence, the latter being retained. The abducens is entirely intact in part of the cases; these were accordingly simple cases of bilateral anterior internuclear ophthalmoplegia. Especially frequent is a mild facial palsy which is usually only unilateral. Among the general disturbances of sensation and motion in the bilateral cases have been speech disorders, troubles in swallowing, salivation, ataxia, hemianesthesia, and pain in the joints.

The author includes the findings in a case of his own, in a boy of ten years. Two months previously the boy had suffered with mumps. The grandfather had been treated for lues. There was divergent strabismus, and both interni were completely paralyzed for voluntary searching glance ("Spähen") and automatic following vision, and on turning the head during fixed gaze. On the other hand the interni contracted very well in convergence. Vision was 5/9 in each eye.

Examination of the vestibular ap-

paratus showed good hearing on each side. The test with cold water as to the horizontal and vertical semicircular canals of the right side brought out no nystagmus, dizziness, or nausea. On the left side the vertical semicircular canal showed no reaction, whereas the horizontal one answered normally with nystagmus. The turning test to the right gave a normal nystagmus to the left, while turning to the left gave a diminished nystagmus to the right. There was transient mild facial palsy. One month later all symptoms and signs had disappeared.

H. D. Lamb.

5. CONJUNCTIVA

Derkac, V. **Clinical observations on interrelation between trachoma and syphilis.** *Klin. M. f. Augenh.*, 1927, v. 79, Oct., p. 487. (4 ill.)

Out of 280 cases of trachoma examined for Wassermann reaction, 33 were strongly positive. These are discussed in detail. They showed that the connection between trachoma and syphilis is a loose one and incidental. The cornea presented greater vulnerability, and treatment of trachoma with astringents has a deleterious effect on luetic corneal affections. *C. Zimmermann.*

Heal, J. G. F. **Serious hemorrhage from the conjunctiva in an infant following instillation of silver nitrate solution.** *Brit. Jour. of Ophth.*, 1928, v. 12, Jan., p. 33.

(See editorial, *A.J.O.*, p. 148.)

Loddoni, Giovanni. **Follicular conjunctivitis in relation to the vegetative nervous system.** *Annal. di Ottal.*, 1927, v. 55, March-April, p. 173.

The author takes up the question whether so-called follicular conjunctivitis is a distinct clinical entity, or whether as some authors have claimed it represents a mild form of trachoma. Although typical cases may be easily distinguished by the absence of inflammatory changes involving the connective tissue, of scarring, and of corneal lesions in follicular conjunc-

tivitis, and the fact that its contagious nature has never been proved, still there are cases in which a clinical distinction is impossible, and in which even histological findings give no clear-cut distinction. The author examined 31 children between the ages of five and eight years, all of whom had follicular conjunctivitis, with the idea of determining whether or not anything in the general condition of these children was responsible for the disease. Beside the von Pirquet and Wassermann tests, all were examined especially as to the state of the vegetative nervous system. The pulse, respiration, blood pressure and oculocardiac reflex were recorded after injections of adrenalin, atropin, and pilocarpin. As regards the ocular conditions, most showed merely the presence of follicles, while a few showed also some conjunctival hyperemia and secretion, and in one case enough hypertrophy was present to make it resemble trachoma. All recovered within a short time without permanent changes. The children were nearly all in robust health, and neither syphilis nor tuberculosis could be considered a factor. Nearly all showed hypertrophy of lymph nodes elsewhere, especially of the cervical and inguinal glands: they were, in other words, of the lymphatic type. While the possibility exists that the conjunctival folliculosis was only another manifestation of the general lymphatic hyperplasia, there was no constant relation between the degree of hyperplasia and that of folliculosis. The reactions to adrenalin were slight and inconstant, those to pilocarpin within the limits of normal, while all showed a markedly positive reaction to atropin, a slowing of the pulse of over twenty beats, due to paralysis of the parasympathetic nerve endings. All these children, therefore, could be considered of the vagotonic type, and this was borne out by the relative frequency of a markedly positive oculocardiac reflex, that is, a slowing of the pulse of more than ten beats following pressure on the eyeball.

The author concludes that follicular

conjunctivitis is independent of syphilis, tuberculosis, and other preexisting ocular disease. The possibility that at least some cases are attenuated forms of trachoma is borne out by the relative mildness of trachoma itself in infants. The only constitutional factors having any bearing on the condition were found to be the tendency to lymphatic hypertrophy and the fact that all cases belonged to the vagotonic type. The fact that Angelucci had found a predominance of this type in trachoma cases suggests that the constitution may be a factor in both diseases. (Bibliography.)

S. R. Gifford.

Noguchi, H. **Experimental studies of trachoma.** Arch. of Ophth., 1927, v. 56, p. 423.

These studies were made in the Rockefeller Institute for Medical Research and were reported before the Section on Ophthalmology of the American Medical Association, May 16, 1927. Bacterial cultures were made from five cases of trachoma and a microorganism isolated which induced in *Macacus rhesus*, and in the chimpanzee, a granular conjunctivitis resembling that of trachoma patients. The microorganism that produced these effects is minute, Gram negative, pleomorphic, bacilliform, and grows on a semisolid medium containing fresh animal serum and hemoglobin, and only occasionally on blood agar.

Of twelve monkeys inoculated with this organism, in only one was the result negative. In three the lesions developed, remained for a short time, and then receded. In eight there developed a slowly progressive, chronic granular conjunctivitis resembling trachoma. Two plates of photomicrographs show the resemblance of the granules to those of trachoma. The only important differences between the two sets of slides appear to be due to the difference of the normal conjunctiva of the monkey from that of man. A chimpanzee inoculated from the conjunctiva of a rhesus monkey developed the disease, and by inoculation from the

conjunctiva the disease was transmitted from the chimpanzee to another rhesus monkey. The bacilli thus studied have also been found in films and sections from the conjunctiva in cases of human trachoma and in inoculated monkeys.

E. J.

6. CORNEA AND SCLERA

Derby, Geo. S. and Carvill, Maud. **Anterior ocular tuberculosis.** Arch. of Ophth., 1927, v. 56, Nov., p. 523.

In this paper the authors deal with 130 patients, of whom they were able to follow 63. At the very outset they state: "We stand flatfooted in the belief that phlyctenular disease, nodular scleritis, sclerokeratitis, and sclerosing keratitis, rest on the basis of tuberculosis."

In 33 of the 63 cases, the initial inflammation of the eye was a phlyctenular keratitis, in 3 episcleritis, in 6 scleritis, in 14 sclerokeratitis, in 4 uveitis, in 1 iritis.

The diagnosis rested on the ocular findings, focal reactions to tuberculin, signs of tuberculosis elsewhere in the body, ruling out other causes, biopsy of the lesion, and guinea pig inoculation. Other signs of tuberculosis were: Involvement of the lungs in 19 cases, adenitis in 21 cases, pleurisy in 3 cases, thickening of the mediastinal glands in 3 cases, tuberculous synovitis in 2 cases, tuberculous ulcer of the leg, sinus of the breast, abscess of the ear, abscess of the lung, and pulmonary hemorrhage in 1 case each, and skin lesions in 4 cases. There was tuberculosis in the family in 20 cases. The severity was of all degrees.

All but seven cases had recurrences while under observation. These varied from two to sixteen in number. The period of quiescence varied from 3 to 18 years. There were 11 deaths among the 63 patients; 6 died of pulmonary tuberculosis, 2 of influenza, and 3 of unknown causes.

As to the use of tuberculin, the authors state: "We believe the most that can be fairly said of tuberculin therapy at the present time is that in certain instances it may help in cutting

short the present attack. It does not prevent recurrences and occasionally, and especially in inexperienced hands, it may do serious harm."

Tuberculosis of the eye is a chronic disease which may be held in abeyance, but is extremely likely to recur. It should be regarded as in the same class with the arrested case of pulmonary tuberculosis, and these cases are peculiarly liable to develop serious tuberculosis elsewhere. *M. H. Post.*

Ehlers, Holger. **On the formation of precipitates in deep keratitis.** *Acta Ophth.*, 1927, v. 4, no. 3, p. 227.

Ehlers reports 3 cases of the type first described by Rönne in 1920. All the patients showed a parenchymatous keratitis, the most striking feature of which is the appearance of the infiltration as a wave lined with precipitates. The latter are distinguished by irregularity of shape and size, and later they become pigmented. The keratitis showed a tendency to successive diffusion from the margin, followed by clearing. The etiology is not known. Several authors have described similar cases under differing titles. *E. M. Blake.*

Enroth, Emil. **A case of luetic hypopyon keratitis.** *Acta Ophth.*, 1927, v. 4, no. 3, p. 271.

Enroth's patient presented a yellowish, avascular infiltration in the center of the cornea three to four mm in size. There was a slight loss of surface epithelium and an extensive hypopyon. The patient was treated for ulcer serpens with the usual remedies, including thermocautery, and grew steadily worse. After the discovery of a positive Wassermann and the use of anti-syphilitics the eye healed promptly. The spirochetes are assumed to have migrated from the pericorneal vessels into the parenchyma. *E. M. Blake.*

Friede, Reinhard. **Cases illustrating heredity of congenital cornea plana.** *Klin. M. f. Augenh.*, 1927, v. 79, Oct., p. 464.

Two cases are described in detail, the second with genealogical tree of

three generations. Congenital cornea plana is not a disease by itself, but one form of expression of a hypoplastic disturbance of development of the whole cornea and sclera, which may appear in very different clinical forms. It always seems combined with arrest of development of retina and optic nerve. From the genealogical tree the impression was received that the hereditary transmission of cornea plana is of a heterophanous type, i.e., an idiotypical disturbance of development, latent or manifest in one parent, may become manifest in various members of the next generation in different ways. *C. Zimmermann.*

Kaz, R. **A celluloid lid shield for trachomatous pannus.** *Clin. Ophth.*, 1927, Oct., pp. 543-546.

The author describes a thin celluloid plate cut to approximate the inner surface of the upper lid, the margin of the plate projecting slightly beyond the lid margin. He has applied this in cases of pannus in which the upper lid was extremely rough.

This device was presented first in 1914 and is further recommended in the present communication. The author quotes two cases in which vision was more than doubled following the use of these plates. *L. T. P.*

Knapp, Paul. **Synopsis of the present status of tattooing with gold chloride.** *Klin. M. f. Augenh.*, 1927, v. 79, Oct., p. 433. (2 ill.)

(See editorial, page 64 of this volume.)

Török, Ervin, and Redway, L. D. **Report of three cases of keratoconus.** *Arch. of Ophth.*, 1928, v. 57, Jan., p. 19. Also transactions. *Amer. Ophth. Soc.*, 1927.

The authors discuss the various theories propounded to explain the development of keratoconus, first, congenital disturbances in development, second, acquired decreased resistance of the cornea.

The three cases considered in this report show several points of interest.

In the first place, a low basal metabolic rate, the result of hypofunction in the thyroid and possibly other glands, was found constantly. In association with this there was a low hemoglobin index with a diminished red cell count, characteristic of chronic infection, which may possibly be the cause of the low metabolic rate. Hypofunction of the glands of internal secretion as an etiological factor is, nevertheless, supported by much evidence. In the second place, rarefaction was found in the cranial bones, but not elsewhere, except that the teeth were chalky in the case in which the greatest rarefaction was found. This patient also had the most marked keratoconus. The calcium metabolism was not studied, though the author believes that its determination would be of great value. He is of the opinion that these two factors, namely, hypofunction of the glands of internal secretion and the altered calcium metabolism indicated by the rarefaction in the cranial bones, taken in conjunction with one another, play an important etiological part in the production of the conus.

Treatment with thyroid extract resulted in improvement in all three cases; in the judgment of the author, probably the result of alteration in the retinal circulation or stimulation of the central nervous system.

An extensive bibliography accompanies the paper. *M. H. Post.*

Wolchonsky, S. **Tattooing of the cornea with gold chloride according to Knapp.** *Klin. M. f. Augenh.*, 1927, v. 79, Sept., p. 367.

Wolchonsky had very good results with acid gold chloride in tattooing the leucomata of twenty patients. He considers the method a great advance.

C. Zimmermann.

7. UVEAL TRACT, SYMPATHETIC DISEASE, AND AQUEOUS HUMOR

Ascher, K. W. **Treatment of inversion of the iris.** *Klin. M. f. Augenh.*, 1927, v. 79, Aug., p. 237. (1 ill.)

For reposition of the inverted iris,

Ascher devised a hook with three or four small rounded teeth in the shape of a comb, bent toward the shaft, which is introduced behind the inverted iris.

C. Zimmermann.

Braun, G., and Herrnheiser, G. **Roentgen ray treatment of tuberculous choroiditis.** *Klin. M. f. Augenh.*, 1927, v. 79, Aug., p. 187.

In three patients with tuberculous affections of the choroid, prompt recession of the disease and extensive tissue restoration were observed after roentgen radiation in broken doses. The method of application differed from that of Scheerer and Stock, who had unsatisfactory results, in the frequent application of smaller doses at short intervals.

C. Zimmermann.

D'Amico, Diego. **Study of the function of the ciliary body.** *Annali di Ottol.*, 1927, v. 55, Jan.-Feb., p. 44.

Using various differential stains for iron on sections of a normal human eye and eyes of various animals, the author finds that the melanin of the pars ciliaris retinae in the human eye is particularly rich in iron, while that of the pars retinica and pars iridica contains very slight amounts. In animals this richness in iron of the pars ciliaris was not found. The author concludes that the presence of iron, so important as a catalyzer in biologic processes, indicates a peculiar function for the pigment epithelium of the ciliary body.

S. R. Gifford.

Grüter, W., and Meyer, A. **A case of variable pupillary reaction.** *Zeit. f. Augenh.*, 1927, v. 63, Nov., p. 223.

After brain concussion a man free from signs of arteriosclerosis and syphilis was left with a left abducens paralysis and a constant weakness of the left pupillary sphincter, both interpreted as a nuclear or infranuclear injury.

By suggestion it was possible to induce spastic attacks in lids, convergence, pupillary sphincter, and accom-

modation, in association with other hysterical phenomena.

The most interesting symptom was periodic mydriasis of the left pupil with failure of light reaction, lasting from a few hours to several days, and interpreted as a spastic phenomenon in the dilator neuron. This might be a hysterical manifestation but an irritative lesion of the sympathetic must be seriously considered. A transitory glycosuria soon after the injury suggests that the possible lesion irritating the sympathetic may have been in the brain stem.

F. H. Haessler.

Handmann, M. Rapid subsidence of exudate in inflammation of the anterior segment of the eye, under the influence of mydriatics, etc. *Klin. M. f. Augenh.*, 1927, v. 79, Sept., p. 323.

In forty-two cases of iritis Handmann saw within thirty to sixty minutes after atropin mydriasis strikingly rapid clearing of fibrinous exudates and opacities of the anterior segment of the eye, and also of edema of the cornea and deposits on Descemet's membrane. He attributes this to breaking up of seclusion of the pupil, whereby the fluids from the posterior segment, which differ from the aqueous in their physical and chemical properties, influence the process which had previously consisted entirely of solution and digestion of inflammatory products by the aqueous. Further exudate is checked by folding of the iris in mydriasis and consequent decrease in its surface area.

C. Zimmermann.

Heckel, Edw. B. Diphtheria antitoxin in large doses for sympathetic ophthalmia. *Arch. of Ophth.*, 1928, v. 57, Jan., p. 54. Also transactions American Ophthalmological Society, 1927.

The author reports four cases, two of anterior general uveitis and two described as a neuroretinitis, following injury and loss of the other eye; conditions commonly known as sympathetic ophthalmia. These four cases all did

badly under the usual treatments, but following the use of large doses of diphtheria antitoxin showed considerable improvement. The first case was given five doses of 3,000 units, the second four of 20,000 preceded by smaller doses, the third ten of 5,000 units, the fourth seven of 20,000 units.

The first case recovered normal vision, the second improved from 5/200 to 20/200. The third patient was a child, in whom no definite determination of vision could be made out, but it was obviously improved. The fourth had an increase in vision from 2/200 to 6/200. The author presents these observations without comment.

M. H. Post.

Kause, L. On paradoxical near vision reaction. *Klin. M. f. Augenh.*, 1927, v. 79, Aug., p. 165.

A man aged forty-six years had a pupillary diameter of 3.5 millimeters on looking at distance, and of 5 millimeters in near vision, and the pupils promptly reacted to light. He was hypermetropic, right vision with +1.50 sphere = 6/6, left vision with +2.00 sphere = 6/36. The reaction was probably due to a supranuclear disturbance of innervation of the pupils caused by rapidly developing weakness of the center for near vision adjustment, and separation of the reflex for near vision adjustment from that for accommodation and convergence.

C. Zimmermann.

Landolt, Marc. A case of false cyclic mydriasis. *Arch. d'Opht.*, 1927, v. 44, Dec., p. 769.

It is suggested that the oculist should have a place to examine the pupils which is always under the same amount of illumination with artificial light. Then if one adopts a fairly accurate method of measuring the diameter of the pupil he will have values which, although they may not be absolutely accurate, may be compared, so that one can determine the progress of a lesion involving the pupil. The writer was called to see a patient whom a neurologist described as having al-

ternately a dilatation of the right and then of the left pupil. Upon investigation and measuring the pupils in constant illumination it was found that the left pupil did not vary in size but that the right pupil was first dilated and then contracted, so that the pupillary symptoms were entirely unilateral. Thus it was shown that the case was not one of cyclic mydriasis. This case emphasizes the necessity for more careful measurement of the pupils.

M. F. Weymann.

Rizzo, A. **On the mydriasis of cocaine.** *Annal. di Ottal.*, 1927, v. 55, Jan.-Feb., p. 1.

A review of the literature shows that the exact mechanism by which cocaine produces mydriasis is not agreed upon. The author conducted exact measurements on one hundred patients after instillation of three drops of two per cent cocaine hydrochloride. Mydriasis always occurred, the maximal dilatation being five mm. on an average. Forty-two cases showed physiological anisocoria before the instillation, thirty-two having the right pupil larger and ten the left. In older patients mydriasis was less marked and occurred later. Mydriasis began usually after ten to fifteen minutes, reached a maximum after thirty minutes, and had usually disappeared after three hours, although a few showed dilatation the following day. Six cases showed a primary miosis coming on after five to fifteen minutes, which gave place after ten to twenty minutes to mydriasis. In a number of cases, after the pupil had returned to normal following mydriasis, a second mydriasis occurred, and in seven cases a third mydriasis could be observed. One case of vernal catarrh showed a fourth mydriasis and in one eye a fifth, while in another case of vernal catarrh, a series of pupillary oscillations lasting forty minutes followed the first mydriasis. In four subjects showing cocaine mydriasis, instillation of three drops of one per cent pilocarpine produced marked miosis in ten to thirty minutes. One-half per cent eserine produced a more marked effect. Adrenalin instilled at the time

of maximal cocaine mydriasis showed no effect. When atropine was first instilled, and then cocaine, the young subjects showed a distinct increase in the mydriasis following cocaine, while in old patients no such increase was noted. In twelve rabbits, the cervical sympathetic was resected, or the superior cervical ganglion removed, and the cocaine reaction was tested after six days and again after two months, a space of time sufficient to allow for the effects of nerve degeneration. Tests at both times showed no mydriasis from cocaine on the operated side, while the usual mydriasis occurred on the unoperated side. The miotic effect of pilocarpine and eserine in these operated animals was unaffected, the miosis being the same on the operated and unoperated sides. Instillation of adrenalin in normal rabbits produced a slight mydriasis, and also augmented the effect of cocaine mydriasis, in contrast with what occurs in the human eye. After resection of the sympathetic, instillation of adrenalin alone produced marked mydriasis on the operated side. In eyes on the operated side, which had shown no reaction to cocaine, adrenalin produced marked mydriasis. Freshly removed eggs of frogs showed mydriasis on immersion in atropine, cocaine, and adrenalin, pilocarpine and eserine having no effect.

From his experiments, the author concludes that the mydriasis of cocaine can not be due to depression of the third nerve endings, since the pupil still reacts to light and convergence and to miotics. The fact that cocaine is ineffective after section of the cervical sympathetic shows that it must act either by stimulation of sympathetic nerve endings in the dilator iridis, or by depressing the inhibiting fibers to this muscle which are also supplied by the sympathetic. The fact that adrenalin produces mydriasis in operated animals in which cocaine is ineffective, and the further fact that adrenalin increases the mydriasis of cocaine in normal animals, are evidence in favor of the latter view, in which case adrenalin would be assumed to act directly on the dilator muscle, being hence effective.

tive when these inhibitory fibers are paralyzed by section or by the effect of cocaine. A choice between the theories that it stimulates the sympathetic motor nerve endings and that it paralyzes inhibitory fibers cannot yet be definitely made without further observation. (Bibliography.)

S. R. Gifford.

8. GLAUCOMA AND OCULAR TENSION

Bonsdorff, B., and Rähä, Carl-Eric. **Pulsating displacement of the cornea in rabbits.** *Acta Ophth.*, 1926, v. 4, no. 1, p. 53.

The following conclusions are drawn by the authors from experiments on rabbits. Pulsating corneal displacement results from the retrobulbar vascular pulse. The intraocular pressure pulse is purely arterial. Pulsating displacement of the eyeball as a whole results from a combination of the orbital venous and arterial pulses. The eyeball sinks into the orbit as the result of the centripetal flow of the peripheral venous blood.

E. M. Blake.

Rados, Andrew. **Nutrition of the eye.** *Arch. of Ophth.*, 1927, v. 56, Nov., p. 567.

In this paper the author takes up various intraocular fluids, their production, elimination, and effect on the different tissues of the eye. He discusses Leber's theory and Hamburger's recent writings. In the author's opinion, the production of the aqueous is a function of the ciliary epithelium, because paralysis of the function of these cells by sodium fluoride will result in lack of production. He believes that a solution so different from the blood-serum as the aqueous could not possibly be derived from simple filtration through the walls of the vessels of the iris, but must be a complicated secretion. In his opinion the ciliary epithelia show a double function. The ionizable solution is due to dialyzation; the colloidal, that is, the solution rich in albumen, is the result of filtration. Dialyzation permits the passage of salts in definite amounts only. From this he draws the corollary that break-

ing down of this selective function of the ciliary epithelium may result in cataract formation. He shows by a number of examples that the course of the metabolism of the lens is regulated by means of the capsule. He is convinced that the vitreous plays an equally important part with the aqueous in this metabolism.

M. H. Post.

9. CRYSTALLINE LENS

Achermann, E. **Senile axial fungiform opacity of the surface of the lens nucleus.** *Klin. M. f. Augenh.*, 1927, v. 79, Oct., p. 503.

Both lenses of a man aged sixty years showed an axial supranuclear fungiform opacity separated into five segments by the distinct optical system of sutures. The accompanying typical senile symptoms of degeneration, especially the "hammered" endothelium of the cornea and wedge-shaped opacities of the peripheral cortical zones, suggested a merely senile change.

C. Zimmermann.

Busacca A. **Fold of the capsule along the equator of the lens.** *Klin. M. f. Augenh.*, 1927, v. 79, Oct., p. 518. (6 ill.)

In three cases of subluxation of the lens Busacca observed with the slit-lamp folds of the capsule along the equator. The nature of these formations was anatomically verified on the extracted lens of the first case. He considered a causal connection between the formation of the fold at the equator and the lesions in the attachments of the lens (detachment of the zonular lamella in two cases, alteration of the zonular fibers in the third), without attempting a definite explanation.

C. Zimmermann.

Jess, A. **Pigment accumulation in the lens in pseudosclerosis in histological section.** *Klin. M. f. Augenh.*, 1927, v. 79, Aug., p. 145.

Histological examination of a case of pseudosclerosis, reported by Oloff and Simerling (*Deutsche med. Woch.*, 1922, p. 925), with regard to the lo-

calization of pigment granules in an opacity of the lens similar to chalcosis cataract, was negative. Apparently the substratum of the clinical observation of discoloration of the lens is so delicate and so unfavorably situated that it is lost by the usual methods of preserving. Jess therefore recommends removing the lens immediately after death and examining it for pigment in a fresh teased preparation of the capsule and superficial layers.

C. Zimmermann.

10. RETINA AND VITREOUS

Koyanagi, Y. **Influence of pressure bandage on intraocular tension.** *Klin. M. f. Augenh.*, 1927, v. 79, Sept., p. 292. (7 curves.)

Experiments on rabbits' eyes under weights showed rapid increase of intraocular tension within thirty seconds. Then the tension slowly decreased, after from thirty to forty-five minutes, to or below its original amount. A pressure bandage applied according to the usual methods loses its original pressure effect and in the normal eye causes a transient rise of tension only when first applied, hypotony developing after a longer interval. Hence it may act unfavorably on detachment of the retina.

C. Zimmermann.

Lo Russo, Donato. **Diabetic retinitis.** *Annali di Ottal.*, 1927, v. 55, March-April, p. 222.

Histories are given of 27 cases of diabetes seen in the clinic at Rome, presenting ocular lesions exclusive of cataract. All were examined as to urinary sugar and albumen, renal function, Ambard's constant, blood sugar and blood nitrogen, and blood pressure. The characteristic ophthalmoscopic findings were hemorrhages in all parts of the retina and white patches of exudate usually associated with hemorrhages. These did not assume the stellate arrangement so often seen in albuminuric retinitis, but two cases with the picture of retinitis circinata were observed. The vessels seldom showed marked changes, but thrombosis of the central vein was seen once, and em-

bolism of a branch of the central artery in another case, in which no retinitis was present. Optic neuritis was seen five times, always associated with renal insufficiency. One case of bilateral optic atrophy was seen, with vision of counting fingers and 6/10, but it is impossible to state that this was due to the diabetes, although no other cause was evident.

The differential diagnosis between diabetic and albuminuric retinitis may offer difficulties when the tests show renal insufficiency, and when the ophthalmoscopic picture is that of an optic neuritis with edema. This appearance is rare, however, in diabetic retinitis, and always indicates a kidney complication. Most cases are distinguishable by the fact that the white patches are punctiform and isolated or in small groups, and that the retina is not edematous, in contrast to the large fluffy confluent patches with retinal edema which are seen in albuminuric retinitis. Where renal insufficiency develops, the picture may change from that of diabetic retinitis to one more like that of the albuminuric form.

Histological descriptions of diabetic retinitis have been rare. The author contributes the findings in both eyes of a case in which diabetic retinitis had been observed during life, a case of diabetes with hypertension, but showing no albumin or impairment of kidney function. The vessels showed marked hyaline thickening, some being occluded. Hemorrhages were present in all layers of the retina. Deposits of hyaline-like material were especially frequent in the nerve fiber and ganglion cell layers, and probably represented coagulated fibrin. Stains for lipoids were negative. Degeneration of the ganglion cell layer was seen, cystic cavities being formed.

Classifying his cases according to the presence or absence of renal and vascular complications, the author observed nine cases in patients with impaired kidney function and cardiovascular disease, five in subjects with hypertension alone, five in subjects with increased total nitrogen but normal Ambard's constant, and seven without any com-

plication. Thus pure diabetic retinitis with no kidney complication exists, and formed twenty-seven per cent of the author's cases. The only fact which can be stated as to the pathogenesis of diabetic retinitis is that diabetes in some way causes changes in the retinal vessels, so that hemorrhages and deposits of exudate in the retina occur.

Retinitis usually occurs late in the disease and most often in patients past the age of fifty. Though usually bilateral, the author saw four unilateral cases. The lesions have a tendency to absorb, but new lesions usually appear, so that a complete clearing up of the retinitis was seen in only one case. The prognosis, contrary to that in albuminuric retinitis, is fairly good, as the author saw patients who had shown retinitis for over thirty years, and who retained fairly good vision. It must be more reserved when renal or cardiovascular complications are present. (Bibliography and microphotographs.)

S. R. Gifford.

Morax, V. **Histopathology of circinate degeneration of retina.** *Annal. d'Ocul.* 1926, v. 163, Nov., 1926, p. 801.

This is a histopathological study of an eye observed ophthalmoscopically to have circinate degeneration of the retina. The eye was removed because of sarcoma of the iris. A colored plate of the ophthalmoscopic appearance and four colored plates of the histopathology are included. Serial sections were made and the relation of each section to the ophthalmoscopic picture being known, conclusions as to the nature of the underlying pathology responsible for the ophthalmoscopic picture were drawn. No abnormalities were found in sections through the papilla. Section through the fovea and its neighborhood showed throughout cystic degeneration of the external plexiform layer and the internal granular layer. In the fovea there was a large cyst filled with fluid. This accounted for the low vision of 1/50, the fovea having appeared normal ophthalmoscopically. There were many hyaline areas in the affected parts and the blood vessels

showed marked arteriosclerosis. The changes were in the perivascular layers and not in the intima. There were no lesions of the choroid or of the rods and cones.

Amman has described the only other case seen microscopically. He attributed the characteristic brilliant areas to former hemorrhages and cystic degeneration. Morax found cystic degeneration in areas not corresponding to the ophthalmoscopic changes, so he was inclined to believe that the white spots seen with the ophthalmoscope were due to hyaline degeneration, as in his case there was a correspondence between the two. He regarded the entire process as a localized arteriosclerosis.

L. T. P.

Puscariu, E. and Nitzulescu, J. **Pathogenesis of nephritic neuroretinitis.** *Annal. d'Ocul.*, 1927, v. 164, Jan., p. 16.

The authors conclude from a study of nineteen cases of neuroretinitis, of which three showed no nitrogen retention or hypertension, seven hypertension alone, one nitrogen retention alone, and eight nitrogen retention combined with hypertension, that the retinitis was due to factors outside of the kidney proper. These produced alterations in the body fluids and it was such alterations which induced both the nephritis and the retinitis.

L. T. P.

Stübel, Ada. **Tubular formation in the vitreous.** *Klin. M. f. Augenh.*, 1927, v. 79, Sept., p. 393. (1 ill.)

A boy aged thirteen years, psychically abnormal, showed in the right eye persistence of the fetal vessels of the vitreous in the shape of a firm tubular strand from the lower nasal part of the posterior capsule of the lens to the optic disc, and the disc was covered by a fold of detached retina. Glistening brownish dots were seen on the fine white threads of the network which the strand formed at its insertion in the lens capsule. Although there were no signs of intraocular inflammation, the case resembled closely a former case in

a girl aged fourteen years who showed such remnants of intrauterine affection, so that the author suspected the same condition.

In the second case, in a microcephalic boy aged eight years, the tubular formation started from the lower temporal portion of the posterior capsule of each lens. As both eyes were microphthalmic, the condition was here undoubtedly due to arrest of development.

C. Zimmermann.

11. OPTIC NERVE AND TOXIC AMBLYOPIAS

Beauvieux, J. **False optic atrophy of the newborn.** *Annal. d'Ocul.*, 1926, Dec. v. 163, p. 881.

This is a very complete description of an exceedingly rare condition found in infants. Three cases are described. It is especially valuable as being the only comprehensive discussion of this interesting condition at present in the literature. An excellent colored plate illustrates the steel gray appearance of the discs better than any description. The characteristic features are (1) moderate mydriasis with complete absence of light reflex; (2) iron gray color of the discs and normal caliber of vessels; (3) motor inco-ordination with spasmodic conjugate contractions of ocular muscles; (4) a transitory blindness from which recovery takes place between five and twelve months. Restoration is not complete because of the usual coexistence of other congenital anomalies such as epicanthus, nystagmus, posterior polar cataract, depigmentation of choroid and retina, and syndrome of Little.

The author attributes false optic atrophy to an arrest of development in the process of myelinization of the lower optic tracts.

L. T. P.

Harris, S. Taylor. **A case of aneurysm of the anterior cerebral artery causing compression of the optic nerves and chiasma.** *Brit. Jour. of Ophth.*, 1928, v. 12, Jan., p. 15.

This is the case record of a woman aged forty-six years who gave a history of seven years previously having

had a sudden attack of double vision lasting several months. In April, 1926, she suffered from severe headaches and marked deterioration of vision. The fundi and discs were normal; right field contracted to thirty degrees, and a large nasal defect in the left. The headaches continued, she became drowsy, but her mental state was good. Wassermann and radiographs of the sella turcica were negative. The discs became very pale, the retinal vessels were normal in size. Vision was suddenly lost and she became unconscious, dying about twenty hours later. Autopsy showed flattened optic nerves, and a large tense swelling between the inner aspects of the two temporal lobes and in front of the pons. The tumor was filled with clotted blood, at one point it was ruptured, and the wall in places showed patches of atheromatous-like thickening. The failure of the x-ray picture to demonstrate the mass was likely due to the lack of advanced arteriosclerotic changes. The variability in visual symptoms might perhaps be regarded as a feature whereby aneurysm could be distinguished from other types of tumor involving the chiasm and optic nerves. In view of the absence of syphilis and arteriosclerotic changes the author believes the condition was due to a local congenital weakness in the arterial walls. (Three illustrations.)

D. F. Harbridge.

Koyanagi, Y. **Occurrence of so-called Schnabel's caverns in the optic nerve of the nonglaucomatous eye.** *Klin. M. f. Augenh.*, 1927, v. 79, Sept., p. 371. (8 ill.)

Four cases of growing orbital tumor with exophthalmos are described, in which glaucomatous symptoms did not develop, but hypotension prevailed. This was in accordance with formerly published experiments of the author on rabbits. Three cases came to enucleation, and in two of these Schnabel's lacunæ were found in the prelamellar and intralamellar sections of the optic disc, which so far had been considered characteristic of glaucoma. For their

development in orbital tumor the conditions seemed to be similar to those in glaucoma, the optic nerve during development of the exophthalmos undergoing at first hyperextension and then rupture with secondary formation of the excavations.

C. Zimmermann.

12. VISUAL TRACTS AND CENTERS

Ascher, K. W. **Visual aids in ocular palsies (half frosted and biprismatic glasses).** *Klin. M. f. Augenh.*, 1927, v. 79, Aug., p. 209. (17 ill.)

To enlarge the limited visual field of the paretic eye and obtain binocular perception of depth, Ascher has devised biprismatic lenses analogous to bifocals. The prism is cemented on the lens, and is frosted from the point at which diplopia begins.

C. Zimmermann.

Warschawski, J. **Precise localization of the visual field of each eye in the visual cortex.** *Klin. M. f. Augenh.*, 1927, v. 79, Aug., p. 216. (3 ill.)

During operation upon a cyst at the left angle between cerebellum and pons in a boy aged fourteen years, the left occipital pole was held for a considerable time with the finger and was injured by a needle which caused a small superficial hemorrhage. Later an incongruous central right-sided hemianopic scotoma, with preservation of the macula, was disclosed upon repeated examination. The author sees in this corroboration of Kleist's theory that the fascicular regions of the contralateral eye lie in the lower broader granular layers of the visual cortex and those of the homonymous eye in the upper smaller layer. The reason why the scotoma of the contralateral right eye was larger was that many more cells and fibers in the equally large area of the lower granular layer of the visual cortex must have been damaged than in the upper. As only the left occipital pole was injured, preservation of the macula was a further clinical proof of the theory of Lenz as to the double supply of the macula by central decussations.

C. Zimmermann.

Wolff, E. **A bend in the sixth cranial nerve, and its probable significance.** *Brit. Jour. of Ophth.*, 1928, v. 12, Jan., p. 22.

The author points out the lack of localizing value if the sixth nerve is involved alone. The nerve may be affected in almost any type of cerebral lesion. The investigator ascribes this to the position and course of the nerve. Instead of the sixth nerve, as is usually considered, having a long, straight anteroposterior course, it runs almost vertically up the back of the apex of the petrous temporal. Having arrived at the sharp upper border of this bone, it bends forward, under the petrosphenoidal ligament of Grüber, practically at a right angle, to run almost horizontally forward in the cavernous sinus. A tumor in any position in the cranium will tend to force the medulla and pons downward, pressing the sixth nerve against the sharp upper border of the petrous temporal.

D. F. Harbridge.

14. EYELIDS AND LACRIMAL APPARATUS

Cronstedt, L. **A case of ptosis atonica or blepharochalasis, with bilateral luxation of the lacrimal gland.** *Acta Ophth.*, 1927, v. 4, no. 2, p. 177.

The patient described by Cronstedt was a fourteen year old girl in whom the attacks of swelling and redness of the lids began three years previously. Both lachrymal glands were luxated. History and physical examination revealed no good cause for the condition. A section of excised skin showed nothing remarkable beyond an actual thinning of the tissues. The lachrymal glands were histologically normal. The article contains a good review of other similar reported cases.

E. M. Blake.

Friberg, T. **A case of cyst of the lacrimal sac (with x-ray pictures).** *Acta Ophth.*, 1926, v. 4, no. 1, p. 28.

The patient described by Friberg was a woman of twenty-six years whose left eye had teared for only one month. The nasal portion of the lower orbital wall was curved forward and

presented a depression six mm. deep. After lipoiodol injection x-ray demonstrated that the sac and canaliculus were displaced backward by a cyst. Excision of the cyst resulted in relief of epiphora and allowed fluid injected into the punctum to flow into the nose. True cysts of the lachrymal sac are very rare.

E. M. Blake.

Hardie, David. **A case of myasthenia gravis operated on for ptosis by Hess's method.** *Brit. Jour. of Ophth.*, 1928, v. 12, Jan., p. 31.

A man aged thirty-eight years noticed printing run together, later diplopia and difficulty in keeping his eyelids open. Pluriglandular treatment was ineffective. About six months later Hess's operation was performed on the left eye with very satisfactory results. Owing to the diplopia, it was felt ill-advised to operate on the fellow eye.

D. F. Harbridge.

MacRae, Alex. **Webster's operation for entropion of the upper lid.** *Brit. Jour. of Ophth.*, 1928, v. 12, Jan., p. 25.

As a result of experience with many hundreds of operations covering a period of ten years, in which there were no failures, the author recommends this as the operation of election. It is said to be "fool-proof," simple in technique, requires no sutures, and in case of failure, no damage is done. The details of the operation may contain a few modifications by the author, but in the main are essentially those of the originator, Dr. Webster.

A Snellen's entropion clamp placed in reverse position everts the lid. An incision is made parallel with and three mm. from the lid margin through the conjunctiva and tarsal cartilage, and extending from end to end of the lid. The ends of the incision are curved slightly forward toward the lid margin. Care should be exercised to avoid leaving hair follicles in the proximal part of the lid. The clamp is removed and a moist pad is placed on the lid. A strip of thin buccal mucous membrane rather longer than the wound and four

to five mm. in width is removed. The strip is laid on the finger with the raw surface exposed, trimming off all excess. The lid is now everted and all clots carefully removed. The graft is placed in the incision, care being taken to tuck the end in securely. The lid is then replaced and a pad and bandage applied. No sutures are used. Dressings are left off after five days.

D. F. Harbridge.

Ricciardi, M. **Contribution to the study of senile ectropion.** *Annal. di Ottal.*, 1927, v. 55, Jan.-Feb., p. 51.

After a résumé of the anatomy of the various portions of the orbicularis and of theories of their action on the lower lid, the author describes results of slow moving pictures which he made of the act of winking by normal patients and those with senile ectropion, the movements of three points at the outer, middle and inner portions of the lower lid being noted on a calibrated screen. It was found that in normals, the first part of the movement was a pulling down and in of the outer portion, which was succeeded by a slight raising and greater pulling inward of the middle portion, followed by a greater raising and slighter pulling in of the inner portion. That is, the movement was a complicated spiral one commencing at the outer end of the lid. In patients with ectropion, the second and third parts of the movement were abnormal, the middle portion descending slightly instead of rising, and the inner portion being pulled in further than the normal lid but not raised. The action of the ciliary portion of Riolan's muscle is necessary to hold the ciliary border in contact with the globe. Where this muscle fails to act, the combined effect of Horner's muscle, which pulls the lid inward, and of the septal portion, which pulls backward on the tarsus, will turn the free lid border out, and depress it. Under these conditions, the lid is pulled farther inward by these muscles, which results in an actual lengthening of the lid. Sections of tissue removed from lids with senile ectropion show a degeneration of muscle fibers affecting especially the

fibers of Riolan. Once the ciliary border loses contact with the globe, the resulting exposure of the conjunctiva, lacrimation, and eversion of the tear point commences a vicious circle. (Bibliography.)

S. R. Gifford.

15. TUMORS

Castello, Bartolo. **Corneoconjunctival dermoids.** *Annal. di Ottal.*, 1927, v. 55, March-April, p. 265.

Three cases are reported. The first, in a girl of eighteen years, covered most of the cornea, extending three millimeters on to the sclera, and preventing apposition of the lids. It was removed, and sections showed it to consist of an epithelial covering and a stroma containing fibrous tissue, glandular lobules with cystic enlargement, a nodule of cartilage, adipose tissue, and some rudimentary lymph follicles. The second patient, a girl of eight years, showed exactly symmetrical tumors of the bulbar conjunctiva at the outer limbus of each eye. Sections showed connective tissue with some sebaceous glands. In the third case the nodule was situated at the lower outer limbus, extending three millimeters on to the cornea. These tumors are best explained as due to an adhesion between the embryonic globe and the tissue which is to form the lids. According to Contino, if the adhesion involves only the ectoderm a simple dermoid results, but if it involves the whole thickness of the lid border a coloboma of the lid is the result, the dermoid corresponding to the coloboma. The cause of the adhesion may be pressure on the lids in intrauterine life, and may be in relation to delays in closure of the oblique facial fissure. The tumor in the author's first case must be classified as a mixed teratoma, the others as pure dermoids. (Bibliography, clinical photograph, and photomicrographs.)

S. R. Gifford.

Montalti, Mario. **Pseudoglioma.** *Annal. di Ottal.*, 1927, v. 55, March-April, p. 274.

The author reports histological findings in two patients whose eyes were

enucleated for glioma. Both were less than two years old. In the first case a large retinal detachment was found, without any evident cause. An albuminous fluid containing no cellular elements was beneath the retina. In the second case an inflammatory process had started in the ciliary body and the vitreous contained cellular exudate. The pupil was occluded by a membrane which prevented a view of the fundus. In this case, the author believes a large iridectomy would have revealed the true state of things, so that the eye might have been saved. (Bibliography.)

S. R. Gifford.

Mousselewitsch, Anna. **Lipodermoid of the globe connected with a skin process in the upper lid.** *Klin. M. f. Augenh.*, 1927, v. 79, Sept., p. 384.

A woman aged twenty-nine years showed a lipodermoid of the temporal bulbar conjunctiva and of two-thirds of the cornea of the right eye, in conjunction with an appendage of the skin of the upper lid, coloboma of this lid, opacity and hypesthesia of the cornea, and anterior polar cataract. It is suggested that an amniotic band had pressed upon the eye during intrauterine life and had led to the formation of the lipodermoid, persisting in the form of the skin appendage and causing the coloboma of the upper lid. Other complications in the eye were found by Nobbe in sixty-five per cent of the cases of lipodermoid.

C. Zimmermann.

16. INJURIES

Comberg, W. **Rare sequelæ of contusion in the lens.** *Klin. M. f. Augenh.*, 1927, v. 79, Sept., p. 352. (2 ill.)

A small piece of steel had entered the center of the lens about in the equatorial plane, and there was a rather large opening in the posterior capsule, caused by contusion of the lens tissue in the direction of impact, by contrecoup. As the vision was 3/50, operation was postponed. Siderosis did not set in.

In the second case a student had pushed a penholder against his right

eye and produced a contusion opacity of the cornea with grey streaks in the form of a comb in the posterior subcapsular tissue of the lens, which disappeared after eighteen days. Displacement of lens substance by contusion leads to changes in tension which are of great influence on the optical condition, and produces opacities which disappear after readjustment of tension.

C. Zimmermann.

Hartmann, K. **Adjuvants to magnet points for extraction from interior of eye.** *Klin. M. f. Augenh.*, 1927, v. 79, Sept., p. 362.

A very small fragment of iron in the upper nasal quadrant of the lens was attracted by the giant magnet but fell into the lower angle and became firmly lodged in the root of the iris. All efforts to extract it were in vain until an iris forceps was introduced closed and brought into contact with the pole of the giant magnet. The fragment at once flew to the forceps and was removed without iris prolapse.

C. Zimmermann.

Klar, J. **Head tetanus after corneal perforation.** *Klin. M. f. Augenh.*, 1927, v. 79, Sept., p. 355.

While hammering on a scythe, a piece of steel entered the left cornea of a man aged forty-six years and ruptured the iris. The fragment was extracted with the electromagnet, but two days later exenteration of the eyeball was necessary on account of septic endophthalmitis, the whole vitreous being changed into pus. Five days later paralysis of the left facial nerve developed, with trismus, and the next day convulsions of the pharyngeal muscles, and paralysis of the right superior and inferior recti muscles. Tetanus antitoxin was of no avail, and the patient died the following day. Autopsy was refused. The author ascribes the disturbance to hematogenous and neurogenous intoxication of the central nuclei, and the short period of incubation and fulminating course are attributed to favorable conditions of circula-

tion and absorption in the eye and the brevity of the nerve path to the brain.

C. Zimmermann.

17. SYSTEMIC DISEASES, INCLUDING PARASITES

Schmidt, Karl. **Experimental studies on the occurrence of herpes virus in blood and spinal fluid of man and animal.** *Zeitschr. für Augenh.*, 1927, v. 63, Nov., p. 242.

In twenty-three rabbits infected with herpes, blood was removed at various periods for twenty-four hours after infection to just before death from encephalitis. Only once was the presence of virus demonstrable. Of ten human beings with herpes the virus was not demonstrable in the blood of a single one. In twenty-three human beings who were not suffering from herpes but thirteen of whom had had herpes, it was not possible to demonstrate the presence of virus in the spinal fluid by intracorneal and intracerebral inoculations in rabbits.

These experiments were conducted as a check on the results of Bastai and Busacca, who had an overwhelmingly high percentage of positive inoculations.

F. H. Haessler.

18. HYGIENE, SOCIOLOGY, EDUCATION AND HISTORY

James, R. R. **The father of British optics.** *Brit. Jour. of Ophth.*, 1928, v. 12, Jan., p. 1.

The contribution gives a preamble of the literature relative to the place of birth, institution of learning, and subsequent busy life of Roger Bacon. A portion of his work was a scientific investigation of optics—the bending of rays upon passing through various media; combustion occurring when the sun's rays are gathered up and brought to a focal point. A record of his research is presented in the three treatises, *Opus Majus*, *Opus Minus*, and *Opus Tertium*. Bacon wrote and thought far in advance of his time, and he suffered in consequence many indignities and persecutions.

D. F. Harbridge.

NEWS ITEMS

News items in this issue were received from Drs. F. Phinzy Calhoun, Morris H. Clark, William T. Davis, John H. Dunnington, L. Webster Fox, Frederick A. Kiehle, W. Holbrook Lowell, M. Paul Motto, G. Oram Ring, Louisa Paine Tingley, H. V. Würdemann, and others. News items should reach **Dr. Melville Black**, Metropolitan building, Denver, by the twelfth of the month.

Deaths

We note with regret the death of a brilliant young English ophthalmologist, Mr. Basil Lang, of Moorfields hospital.

Miscellaneous

The Abner Wellborn Calhoun Lectureship, recently established and endowed under the auspices of the Medical Association of Georgia, honoring a former president of the Association and a pioneer in ophthalmology, will offer its first lecture in the afternoon of May 9, 1928, in Savannah, Georgia, at the annual meeting of the Association. Dr. George E. de Schweinitz of Philadelphia has accepted the invitation to be the first lecturer, choosing as his subject "head-aches".

The annual meeting of the Alumni Association of the New York Eye and Ear Infirmary will be held in New York on Saturday, April 28th. It is proposed to hold all day clinics and a luncheon at the Infirmary, with the annual dinner in the evening. The officers for 1928 are F. Phinzy Calhoun, Atlanta, president; John M. Wheeler, New York, vice-president; and Samuel Oast, New York, secretary-treasurer.

In the review department of the *Klinische Monatsblätter für Augenheilkunde*, Axenfeld severely criticizes Duke-Elder's "Recent Advances in Ophthalmology" for attempting to ascribe to Babbage the stimulus to ophthalmology resulting from the introduction of the ophthalmoscope. Axenfeld remarks that Babbage's ophthalmoscope never played any part in England, but that ophthalmoscopy was imported into England as a consequence of Helmholtz' discovery and construction of the instrument, and of the work of Graefe, Jaeger, Liebreich, and others. Mr. Treacher Collins recognized this fact in an address at the recent Hague conference on the International Congress of 1929.

The Pennsylvania Home Teaching Society and Free Circulating Library for the Blind held its forty-sixth annual business meeting in January. During the year 5873 visits were paid to the blind in ten Pennsylvania counties, 1739 lessons were given in finger reading and Braille writing, and 31392 embossed books were circulated from Philadelphia and 5700 from Pittsburgh. The following officers were reelected: L. Webster Fox, president; Ellis A. Gimbel and Rev. Llewellyn N. Caley, vice-presidents; Mrs. Isabel W. Kennedy, secretary; and John J. Wilkinson, treasurer.

The National Committee for the Prevention of Blindness has changed its name to "the National Society for the Prevention of Blindness".

The thirteenth annual convention of the Catholic Hospital Association of the United States and Canada and the second annual Hospital Clinical

Congress of North America will be held in the Cincinnati Music Hall, Cincinnati, Ohio, June 18 to 22, 1928, inclusive. This Convention and Congress will comprise general scientific meetings, special clinics or demonstrations of hospital departments, and commercial and educational exhibits. A professional program of the highest value and interest is being formulated, and all persons interested in medical and hospital service are cordially invited to attend. Further information may be obtained from John R. Hughes, M. D., Marquette University, Milwaukee.

The one hundredth anniversary of the first issue of the Boston Medical and Surgical Journal was celebrated by a dinner at the Hotel Somerset, Saturday, February 18th.

A series of lectures and demonstrations on physiologic optics and refraction was given by Dr. Edward Jackson of Denver to Ophthalmologists of Houston, Texas, January 30 to February 11 inclusive.

Societies

The Section on Ophthalmology of the College of Physicians of Philadelphia held its regular meeting February 16th. In addition to papers by Drs. H. O. Sloane, Geo. E. de Schweinitz, Alfred Cowan and Burton Chance, Dr. I. S. Tassman, by invitation, read a paper on "senile cataract, with a consideration of the accompanying changes in the lens proteins".

At the last meeting of the New England Ophthalmological Society, held Tuesday evening, January 24, 1928, the following officers were chosen: president, Dr. W. Holbrook Lowell; vice-president, Dr. S. Judd Beach; secretary-treasurer, Dr. S. H. Wilkins; recorder, Dr. S. Judd Beach.

The members of the Kansas City Eye, Ear, Nose and Throat Society held their annual out-of-town meeting at Oklahoma City, January 19th, and were the guests of Drs. McHenry and Ferguson of that city. It was the first time in the history of the organization that this meeting had been held outside of the State of Missouri. A most interesting and instructive clinic was given by Dr. Thomas B. Holloway, of the department of diseases of the eye, and Dr. G. M. Coates, of the ear, nose, and throat department of the University of Pennsylvania. Dr. Holloway varied the usual routine of an operative clinic and gave a very interesting diagnostic clinic of cases selected from the large amount of material which had been collected locally. The clinic was held at the University hospital, which served an excellent lunch for those present. In the evening a very enjoyable banquet was held at the Oklahoma City Club.

There was a joint meeting of the Omaha and Council Bluffs Ophthalmological and Otorhinolaryngological Society and the Sioux Valley Eye and Ear Academy at the Fontenelle Hotel,

Omaha, February 15th. The guests of the meeting were Meyer Wiener, St. Louis; Thomas E. Carmody, Denver; Cecil S. O'Brien, Iowa City; and Archibald R. Knode and Waldron A. Cassidy, Omaha. The next day was devoted to clinics and conferences.

The one hundred and forty-third regular meeting of the Ophthalmological and Otolaryngological section of the Cleveland Academy of Medicine was held at the Tavern, Friday evening, January 27, 1928, Dr. A. B. Bruner presiding. Dr. M. R. Kendall spoke on the advantages and contraindications of the modified radical operation, and Dr. M. B. Cohen on the mechanism of symptom production in allergy, with special reference to the nose and throat.

The annual dinner of the Puget Sound Academy of Ophthalmology and Oto-Laryngology was held at the Seattle Yacht Club January 31st. Sixty-eight members from Seattle, Tacoma, Everett, Bellingham, Eastern Washington cities and the Grays Harbor country were present. Dr. Ernest C. Wheeler of Tacoma was elected president, and Dr. Albert E. Hillis of Tacoma secretary-treasurer, for 1928. The dinner was in honor of the retiring president, Dr. Harry Vanderbilt Würdemann of Seattle, who was presented with a silver shield in commemoration of the completion of forty years in active medical practice.

The speaker of the evening at the dinner meeting of the Industrial Section of the Cleveland Academy of Medicine, held at Hotel Winton January 18, 1928, was Dr. M. W. Jacoby, who discussed "The relationship between visual acuity and industrial efficiency", upon the basis of over eight hundred cases.

At the November meeting of the Ophthalmological and Otolaryngological Section of the District of Columbia Medical Society, Dr. John M. Wheeler of New York and Dr. T. E. Carmody of Denver were the guests of honor and gave interesting and most instructive addresses. A supper was served following the scientific session and a social hour was held.

Personals

Dr. Ellis M. Alger of New York has been elected to the directorate of the National Society for the Prevention of Blindness.

Dr. H. H. Tyson of New York has been invited to attend a meeting of the Pacific Coast Oto-Ophthalmological Society at Santa Barbara from April 18th to 21st.

Dr. Webb W. Weeks of New York has been appointed visiting surgeon of the ophthalmic department of Bellevue hospital, succeeding Dr. John M. Wheeler (resigned).

Dr. Louisa Paine Tingley, consultant in ophthalmology on the staff of the New England Deaconess hospital and the Massachusetts Women's hospital, Boston, has furnished a room in the new Otis Wing of the latter hospital in memory of her husband, Frank Foster Tingley.

Dr. Wm. Evans Bruner was recently elected to the board of trustees of "the Print Society", one of the leading art associations of Cleveland.

Dr. W. Wallace Ralston, Houston, Texas, has been elected president of the Texas Ophthalmological and Otolaryngological Society.

Dr. Fawcett, formerly of Toronto, Ontario, was recently appointed resident ophthalmologist to the Lakeside hospital, Cleveland, Ohio.

Dr. Carlie Bell of Springfield, Missouri, has gone to India to study cataract work at the Civic hospital, Monga.

Dr. Howard F. Hill of Waterville married Elizabeth Meeker of Stanford, Connecticut, February 18, 1928. They sailed February 21st for Italy, and plan to make a prolonged stay.

Dr. and Mrs. Oliver W. Turner of Augusta, Maine, and their daughter Miss Madeleine Turner left New York February 8th for Europe. They are taking the Mediterranean tour and will afterward travel on the continent.

Dr. Frederick A. Kiehle of Portland, Oregon, returned some weeks ago after four months in Europe.

Dr. John Welsh Croskey, Philadelphia, has removed his offices to the Medical Arts Building.

Dr. Eugene R. Lewis, Los Angeles, California, has removed his office to the Roosevelt Building.

Papers of special interest: The papers here listed have been read by members of the editorial staff and collaborators, or attention has been called to them by readers. They seem worthy of bringing to the notice of ophthalmologists in general, although some of them cannot be abstracted or reproduced to advantage. Any reader who wished to become acquainted with all that is written on a particular topic should go over the Cumulative Index Medicus, published by the American Medical Association, and check the titles of articles that refer to the subject or subjects in which he is particularly interested. It is hoped that this brief list of important papers and monographs will be more helpful to the mass of readers than the longer lists. *E. J.*

Dusseldorp, M. Biomicroscopy of the palpebral conjunctiva. (43 ill.) Arch. de Oft. de Buenos Aires, 1927, v. 3, p. 88.

Engelking, E. Forms and etiology of xanthomatosis bulbi. (2 col. pl., 4 ill.) Klin. M.f. Augenh., 1927, v. 79, p. 721.

Fuchs, A. Pseudoglaucoma. (Col. pl. and chart) Brit. Jour. Ophth., 1928, v. 12, p. 65.

Gabrielides, A. Transparent cysts of lid margins. (2 ill.) Ann. d'Ocul., 1927, v. 164, p. 926.

Holm, E. Nystagmus in monocular vision. Acta Ophth., 1927, v. 5, p. 387.

Knüsel, O. Vital staining in human eye. (3 col. pl.) Zeit. f. Augenh., 1928, v. 64, p. 1.

Lijo Pavia J. Epipapillary formations and membranes. (14 ill.) Rev. Oto-Neuro-Oft., 1927, v. 1, p. 354.

Mills, L. Unilateral sighting. (Discussion) California and Western Med., 1928, Feb., p. 189.

Norrie, G. Causes of blindness in children. Acta Ophth., 1927, v. 5, p. 357.

Roelofs, C. O. Latent nystagmus. (11 ill., bibl.) Arch. f. Augenh., 1928, v. 98, p. 401.

Verry, C. D., and Halbertsma, K. T. A. Cases of Parinaud's conjunctivitis. Brit. Jour. Ophth., 1928, v. 12, p. 79.